NAVAL SCIENCE
FOR THE
MERCHANT MARINE OFFICER

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NAVAL SERVICE TRAINING COMMAND

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DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

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LETTER OF PROMULGATION

This curriculum guide was designed to standardize the Naval Science for the Merchant Marine Officer (MMO) course of instruction at all state and federal maritime academy Departments of Naval Science. The materials in this guide are designed to provide all candidates for a USCG Merchant Marine Officer's license with the basic professional information and skills they need to operate a U.S. registry merchant ship as a naval or military auxiliary vessel in time of war or national emergency.

The content of this curriculum guide provides an outline of the information and practical exercises that will enable the student to meet the learning objectives listed in each lesson.

These learning objectives are based on the Navy's Professional Core Competencies (PCCs) for Officer Accession Programs, supplemented by additional Professional Competency Objectives (PCOs) that apply uniquely to U.S. Merchant Marine officer trainees. Each instructor is expected to utilize this guide to develop a course of instruction that meets all objectives and meshes with the overall curriculum provided to prospective merchant marine officers at his/her institution. Departments of Naval Science are authorized to tailor the MMO course to avoid duplicating material offered as part of the required degree/license curriculum at their respective academies. If this option is exercised, close coordination is required with the academy's curriculum review committee to ensure all objectives are mastered by all license candidates prior to graduation.

Instructors should promote critical thinking throughout the course of instruction and provide every possible opportunity for students to practice the use of critical thinking skills. In addition, instructors are encouraged to use their own past experiences to illustrate and enrich their classroom instruction.

This curriculum guide supersedes CNET P1550/13 (12-00) and is approved for implementation upon receipt.

C. J. STEIN
Director of Officer Development

DATE: 17 Jan 05

DEFINITION OF MEASUREMENT TERMS

(Used in describing desired Professional Core Competencies and supporting learning objectives)

I. **Know** - Recall facts, bring to mind and recognize the appropriate material.

Examples: Know the objectives of damage control aboard ship.

Know the safety procedures required to provide safe small boat operations.

II. **Comprehend** - Interpret principles and concepts and relate them to new situations.

Examples: Comprehend the Mission of the U.S. Navy and Marine Corps.

Comprehend the concept of internal forces (e.g., stress, strain, shear).

III. **Apply** - Utilize knowledge and comprehension of specific facts in new relationships with other facts, theories and principles.

Examples: Apply correct plotting procedures when navigating in pilot waters.

Apply correct procedures to determine times of sunrise and sunset.

IV. **Demonstrate** - Show acceptable level of ability in performing a task.

Examples: Demonstrate third class swimming skills and fundamental water survival skills.

Demonstrate the correct procedure used in radio-telephone communications.

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PROFESSIONAL CORE COMPETENCY OBJECTIVES

The primary objectives of this course are to provide prospective merchant marine officers a basic understanding of their role in our national security and to familiarize them with the basic principles and procedures for operating a merchant ship as a naval or military auxiliary in a wartime convoy or independent sailing situation. The Professional Core Competencies (PCCs) listed below are from the Navy's Professional Core Competencies Manual for Officer Accession Programs promulgated in April 2001. Additional professional core competency objectives are provided below for competencies specific to the U.S. Merchant Marine.

Navy Professional Core Competency Objectives

1. The student will comprehend the interrelationship between authority, responsibility, and accountability within a task-oriented organization.

2. The student will know the missions and basic organization of the major components of all the U.S. Armed Forces:

    a. Know the current organization of the Department of the Navy and the relationship of this organization to the National Security Council, the Department of Defense, Joint Chiefs of Staff, and the unified and specified commands.

    b. Comprehend the missions of the U.S. Navy and Marine Corps.

    c. Know the major missions of the U.S. Army, U.S. Air Force, and U.S. Coast Guard.

    d. Know the basic concepts and philosophies outlined in Joint Pub 1, specifically:

        (1) Describe the nature of American Military Power.

        (2) Identify the values in Joint Warfare.

    e. Know the operational and administrative chains of command within the Department of the Navy.

3. The student will know the mission of the U.S. Merchant Marine relative to national security, including its integration with the combat fleet.

4. The student will know the basic forms of naval communication.

    a. Know the proper procedures and correct format for naval messages.

    b. Know proper radio-telephone terminology and demonstrate proper procedure by simulating a radio-telephone communication.

c. Know various methods of visual communications (including flags and pennants, flashing light, and semaphore) and demonstrate procedures for their proper use as outlined below:

(1) Demonstrate knowledge of international signal flags and allied tactical flag hoist procedures through simulated messages.

(2) Know the use of the International Code of Signals (HO-102).

d. Be familiar with the procedures for effecting communications security, including the common causes of security compromise and safeguards to prevent unauthorized disclosure.

e. Know various systems for internal shipboard communications and demonstrate proper sound-powered phone procedures.

5. The student will comprehend the requirements and process for operations security (OPSEC) for military forces, including the following elements:

a. Understand the need for OPSEC, including recognition of the OPSEC threat.

b. Understand the concept of Essential Elements of Friendly Information (EEFI).

c. Know the protective measures used in OPSEC.

6. The student will know:

a. The significant milestones in the history of the evolution of the U.S. Navy and Marine Corps, including the prominent leaders and their contributions; and

b. Know the role U.S. naval forces played in the national strategies and policies of the United States in peacetime expansion and war through the present time.

7. The student will comprehend the historical evolution of sea power and its effects on world history.

a. Comprehend the importance of power projection by seaborne forces and be able to cite historical examples.

b. Know the significant historical developments in the technical evolution of naval weapons systems and platforms.

c. Comprehend the contributions of 19th/early 20th century naval strategists and relate their concepts to current situations.

d. Know the major historical facts in relation to sea power in the global wars 1914-1918 and 1939-1945, including the developments in submarine, amphibious, and air warfare at sea.

8. The student will know the fundamental national interests of the U.S. and potential adversaries.

a. Know the significant historical events of the Cold War period.

b. Comprehend the concepts of low, mid, and high intensity warfare.

c. Comprehend the national interests, policies, and overall military strategy of the U.S. and how these policies and strategies are formulated in the U.S. political system.

d. Comprehend the role of the military forces of the United States within the Constitutional framework and the effect of the National Security Act of 1947 and the Goldwater-Nichols Department of Defense Reorganization Act of 1986.

e. Know the current U.S. maritime strategy for employment of naval forces.

9. The student will know the effect the evolution of third world countries and the development of international terrorist movements have had on the interests, policies, and strategies of the U.S.

10. The student will comprehend the policies and related military actions of the U.S. in developing countries since 1945 and know examples of successes and failures of these policies and actions.

11. The student will comprehend the basic application of electronics systems, communications theory, and electromagnetic wave theory to maritime and naval application in radar, communications, and radio-navigation systems.

a. Know the definition of the effects of ground plane, free space, re-radiation, sky waves, space waves, ground waves, and tropospheric waves.

b. Know the characteristics, advantages and disadvantages of various communication frequency ranges.

12. The student will know the basic terms and procedures associated with replenishment at sea (UNREP).

Merchant Marine Professional Core Competency Objectives

1. The student will know merchant ship communications procedures for convoy operations and independent sailing.

2. The student will know the significant events in the history of the United States Merchant Marine.

3. The student will know the importance of the United States Merchant Marine to the economy and national security of the United States.

4. The student will know the current legal position of the United States Merchant Marine and the current policies pursued by the federal government to ensure that merchant shipping is available to the government in the event of war or national emergency.

5. The student will know the basic procedures for defending merchant ships from common wartime threats, including aircraft, surface vessels,

submarines, mines, divers, cruise missiles, and chemical/biological/ nuclear (CBR) weapons.

6. The student will be familiar with and apply the procedures for merchant ships in convoy operations, including preparations, activation of naval control of shipping, sailing conferences, harbor entry/exit procedures, communications, and tactical maneuvering.

7. The student will know:

   a. The wartime shipping organization, including the structure and responsibilities of the Civil Direction of Shipping Organization (CDSORG), the Naval Control of Shipping Organization (NCSORG), and the Military Sealift Command (MSC). (**NOTE:** The "Naval Control of Shipping Organization" was changed to the "Naval Cooperation and Guidance of Shipping Organization," in October 2003.)

   b. The merchant marine mobilization process.

8. The student will know how merchant ships can function as military auxiliaries, including:

   a. Which merchant ships are useful for what types of military operations;

   b. The principles of strategic sealift and Joint Logistics over the Shore (JLOTS) and how merchant ships would be used in such operations;

   c. How merchant ships are used in direct support of naval forces and the plans for modifying them as needed for underway replenishment (UNREP) tasks.

9. The student will comprehend the opportunities and obligations of a second career in the Merchant Marine Reserve.

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LIST OF LESSON TOPICS

LESSON NUMBER	TITLE	HOURS
1	Course Introduction	1
2	Merchant Marine Reserve/U.S. Naval Reserve Program Brief	1
3	Introduction to Seapower and Maritime Affairs	1
4	American Seapower, 1775-1861	2
5	American Seapower: The Civil War and Development of Naval Theories, 1861-1900	2
6	U.S. Navy in the 20th Century	2
7	American Seapower, 1945-1975	2
8	American Seapower, 1975-1980s	2
9	The Navy at War in the 1990s	1
10	The Navy at War in Afghanistan: Operation Enduring Freedom, 2000-2003	1
11	National Defense Organization	2
12	The Mission, Functions, and Strategy of the U.S. Navy	2
13	The Merchant Marine Today	1
14	The Role of the Merchant Marine in National Security	1
15	Sources of Shipping in Peacetime and in National Emergency	1
16	Civil Direction of Shipping Organization and Naval Cooperation and Guidance for Shipping Organization	1
17	The Merchant Marine in Military Operations	1
18	Underway Replenishment	1
19	Merchant Ship Self-Defense and International Law	1
20	Merchant Ship Self-Defense and Operational Security	1
21	Merchant Ship Self-Defense: Conventional Weapons and Tactics	1
22	Merchant Ship Self-Defense: Chemical, Biological, and Radiological Warfare	1
23	Communications Principles and Emergency Procedures	1
24	Communications Procedures	2
25	Preparing for Convoy Operations	1
26	Convoy Operations Underway	1
27	Convoy Exercise	3
	Total Hours	37

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LIST OF INSTRUCTIONAL AIDS

I. Videos

A. The following videos are part of the official curriculum and have previously been distributed to each unit. These videos should be controlled and serialized as part of the unit's standing educational materials to ensure they are available for future courses of instruction. It is the responsibility of the unit to keep track of the location of the videos and to maintain them in good working condition. Replacements for damaged videos may be ordered from the NETPDTC Regional Visual Information Center by contacting Mr. Ron Burk at ron.burk@navy.mil or (850) 452-1001, ext. 2020.

Number	Title	Time	Lesson
82919	Alongside Refueling	22 min	18
804635	Beating the Odds: The USS Samuel B. Roberts' Fight for Life (Formerly "Beating the Odds," #804632)	18 min	21
805735	From the Sea, Parts I & II	24 min	8
	Great Ships: Armament	50 min	3
806128	History of the U.S. Navy, Prgm #1: The American Revolution through The Quasi War (1775-1800)	16 min	4
806129	History of the U.S. Navy, Prgm #2: The Barbary Wars through the War of 1812 (1801-1815)	16 min	4
806130	History of the U.S. Navy, Prgm #3: End of the War of 1812 through the Civil War (1815-1865)	18 min	4/5
806131	History of the U.S. Navy, Prgm #4: End of the Civil War to World War II (1865-1939)	19 min	5/6
806132	History of the U.S. Navy, Prgm #5: World War II at Sea (1939-1945)	24 min	6
805954	History of the U.S. Navy, Prgm #6: The Cold War Navy (1945-1964)	18 min	7/8
805953	History of the U.S. Navy, Prgm #7: The Navy from Vietnam to the Present (1964-1996)	17 min	7/8

805754	Joint Warfare of the U.S. Armed Forces	11 min	11
	Men Who Sailed the Liberty Ships, The	50 min	6
82804	Nuclear Defense at Sea	20 min	22
804818	SeaPower for the 90's	18 min	8
	Storm from the Sea (commercial)	67 min	8

B. The following films were previously a part of the Merchant Marine Officer curriculum, but replacement copies are no longer available. However, units may still have copies on hand that instructors may wish to include in their classroom instruction.

1. Replenishment at Sea: Basic Elements, #24979, 30 minutes, Lesson 18

2. Operations Security, #805459, 10 minutes, Lesson 20

C. The following videos are additional resources that the instructor may find useful; however, they are not provided through NSTC funding. These materials may be available from the NETPDTC Regional Visual Information Center (see paragraph I.A. above), university/community libraries, or commercial vendors.

1. Suicide Run To Murmansk, 20 minutes, Lessons 20 and/or 25

2. Action in the North Atlantic, 120 minutes, Lessons 20 and/or 25

3. 21st Century Navy, #806474, 10 minutes

D. Other videos may be obtained from university or community libraries, online vendors, online in public domain areas (without cost), or purchased by the unit through commercial vendors. (**IMPORTANT NOTE:** When purchasing videos from commercial vendors, you must keep in mind that many vendors have a license from the copyright owner to rent or sell the film for home viewing only. Public viewing, including classroom, would be a separate license. Therefore, you must make it clear to the vendor that you intend to use the video for educational purposes/classroom use and ensure the vendor has the authority to sell copyrighted materials for this purpose. It is imperative that there be a written purchase document that indicates to the vendor the intended use of the video, the intended frequency of use, the number of students at a typical viewing, and if the product will be shown in its entirety or only in specific segments, so there will be no doubt in the vendor's mind how the product will be used.)

E. **Instructors should be aware that commercial videos provided by NSTC or purchased by the unit are for use in an academic setting only. They are not to be reproduced, sold, copied, or shown in their entirety. Academic privileges allow instructors to utilize portions of videos, books, articles available to the public, and other media in academia to teach and educate. Using or distributing these videos**

in any fashion other than outlined here may constitute copyright infringements. Many short video clips from commercial movies supply the instructors with contemporary, intriguing materials that provide good examples of the topics they are trying to teach, but instructors must use these segments appropriately. Seek official legal advice for any use not mentioned in this guide. Additional guidance may be found in SECNAVINST 5870.4.

F. There are various online vendors and resources instructors may consult when looking for video resources for educational purposes. Recommended are resources used by the United States Naval Academy; resources available on various educational institution websites; archived resources at television station web sites, such as ABC News archived videos at: http://abcnews.go.com/index.html; or government and military-related issues archived by C-SPAN at: http://www.c-span.org/, which may come at little or no cost. The Course Coordinator may be contacted for assistance in locating video resources.

G. Most universities have video libraries or audiovisual organizations that can provide current, topical films to units at no cost. These universities may also have additional funding or arrangements to purchase video rights and rental for use in the classroom environment. Consult with your university's film librarian to locate additional films to support lesson plans.

H. A wide variety of Department of Defense (DOD) materials is available through the Defense Automated Visual Information System/Defense Instructional Technology Information System (DAVIS/DITIS) website at: http://dodimagery.afis.osd.mil. This site contains listings and descriptions of thousands of audiovisual productions/videotapes and interactive multimedia instructional products used by DOD. The NETPDTC Norfolk Regional Electronic Media Center may also be able to provide desired multimedia resources, by contacting Mr. Ron Burk at ron.burk@navy.mil or (850) 452-1001, ext. 2020.

I. **Note that all personnel must exercise caution in using material downloaded from the Internet. Access to works on the Internet does not automatically mean that these can be reproduced and reused without permission or royalty payment. Before using any materials downloaded from the Internet for use in training, you must determine what, if any, copyright restrictions might apply. A good rule of thumb would be to presume that any information on the Internet is copyrighted, and that you should not use it without obtaining permission from the copyright holder. SECNAVINST 5870.4 provides specific guidelines that should be addressed in the copyright permission request letter.**

II. Webpage Resources

BUPERS	www.bupers.navy.mil
Dept of Defense	www.defenslink.mil
DoD 101	www.defenselink.mil/pubs/dod101
DoD Technical Info	www.dtic.mil

Dept of Transportation	www.dot.gov
Defense Security Svc	www.dss.mil/epsq/index.htm
Joint Publication 1	http://www.dtic.mil/doctrine/jel/new_pubs/jp1.pdf
MARAD	www.marad.dot.gov
MMR	www./navres.navy.mil/navresfor/navsurf/n1/n14/mmr-home.htm
MSC	www.msc.navy.mil
NETC	https://www.netc.navy.mil
SDDC	http://www.sddc.army.mil/
Selected Service	www.sss.gov
US Air Force	http://www.af.mil/lib/misc/af101.htm
US Army	http://www.army.mil/armyvision/ArmyVision.htm
US Coast Guard	www.uscg.mil
USMC	www.usmc.mil
USMMA	www.usmma.edu
US Naval Reserve	www.navy-reserve.org
US Navy	www.navy.mil
USTRANSCOM	http://ustcweb.afb.af.mil/

III. Equipment/Instructional Materials

A. Chalkboard/Whiteboard

B. World Map

C. Easel

D. VCR/Monitor

E. PowerPoint slides with computer/projection system or overhead projector with instructor-prepared transparencies

F. Slide projector (optional)

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BIBLIOGRAPHY

***NOTE**: Items marked with an asterisk (*) are NOT provided by NSTC.*

A. **TEXTS** (1 per student, 1 per instructor)

United States Department of the Navy, Naval Service Training Command. Naval Science for the Merchant Marine (SAUF32640), June 2003.

B. **STUDENT REFERENCES**

1. **Texts** (1 book per 3-5 students; 1 book per instructor)

Gibson, Andrew and Arthur Donovan. The Abandoned Ocean: A History of the United States Maritime Policy. Columbia, S.C.: University of South Carolina Press, 2000.

Potter, E. B., ed. Sea Power: A Naval History. 2nd ed. Annapolis, MD: Naval Institute Press, 1981.

2. **Articles/Directives**

*Clark, Vern, ADM, USN. "Sea Power 21" (4-part series). Naval Institute Proceedings, October 2002. (Available online at: www.chinfo.navy.mil/navpalib/cno/proceedings.html.)

Clark, Vern, ADM, USN. "Sea Power 21: Projecting Decisive Joint Capabilities." Naval Institute Proceedings, October 2002. (Available in Appendix A of NROTC Sea Power & Maritime Affairs Curriculum Guide or online at: http://www.usni.org/Proceedings/Articles02/PROcno10.htm or https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

Dur, Rear Admiral Philip, USN. "The Fall and Rise of Naval Forward Presence: Rebuttal." *Proceedings*, July 2000. (Available in Appendix A of NROTC Sea Power & Maritime Affairs Curriculum Guide or online at: https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

Hagan, Kenneth. "On [the Gulf] War." *Naval History*, March/April 1999, pp. 24-30. (Available in Appendix A of NROTC Sea Power & Maritime Affairs Curriculum Guide or online at: https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

Lambeth, Benjamin S. "Lessons from the War in Kosovo." *Joint Forces Quarterly*, Spring 2002. (Available in Appendix A of NROTC Sea Power & Maritime Affairs Curriculum Guide or online at: https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

Marolda, Edward J. "The United States Navy and the Persian Gulf." Paper prepared for Director, Navy Staff, by Naval Historical Center, October 2001. (Available in Appendix A of NROTC Sea Power & Maritime Affairs Curriculum Guide or online at: https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

Tangredi, Sam, CAPT, USN. "The Fall & Rise of Naval Forward Presence." *Proceedings*, May 2000. (Available in Appendix A of NROTC Sea Power & Maritime Affairs Curriculum Guide or online at: https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

*United States Department of Transportation, Maritime Administration. "Annual Report." Washington, DC: GPO, printed in May of each year. (Available online at www.marad.dot.gov. Also see info at www.marad.dot.gov/data_statistics/index.html.)

C. **INSTRUCTOR REFERENCES** (1 per instructor)

1. **Books**

*Academy Course Catalog

Brittin, Burdick H. International Law for Seagoing Officers. 5th ed. Annapolis, MD: Naval Institute Press, 1986.

Friedman, Norman. Terrorism, Afghanistan, and America's New Way of War. Annapolis, MD: The Naval Institute, 2003.

Hagan, Kenneth J., ed. In Peace and War: Interpretations of American Naval History, 1775-1978. Westport, CT: Greenwood, 1984.

Howarth, Stephen. To Shining Sea: A History of the United States Navy, 1775-1991. New York: Random House, 1991.

Keegan, John. The Price of Admiralty: The Evolution of Naval Warfare. New York: Viking-Penguin, 1988.

Mahan, Alfred Thayer. The Influence of Sea Power upon History, 1660-1783. New York: Dover, 1987.

Patterson, Thomas G., J. Garry Clifford, Shane J. Maddock, Deborah Kisatsky, and Kenneth J. Hagan. American Foreign Relations, Volume 2: A History Since 1895. 6th ed. New York, NY: Houghton Mifflin Company, 2005.

2. **Articles/Directives/Publications**

NOTE: *Units can obtain unclassified NWP's and NTTP's on CD-ROM by contacting the Navy Warfare Development Command at fleetpubs@nwdc.navy.mil; Commercial (401) 841-6412/1168; DSN 948-6412; or Navy Warfare Development Command, ATTN: Code N573, 686 Cushing Road, Newport, RI 02841-1207.*

*Coakley, Robert W. "World War II: The War Against Japan." American Military History, Center of Military History, United States Army, Washington, D.C., 1989. (Available at: http://www.army.mil/cmh-pg/books/amh/AMH-23.htm.)

*CNETINST 1534.1 (series), "Regulations and Guidance for the Administration and Management of the Department of Naval Science at Maritime Academies, Colleges, and Schools"

NAVEDTRA 12966, "Naval Orientation." GPO, 1991.

*OPNAVINST 1534.1 (series), "Merchant Marine Reserve, U.S. Naval Reserve Program"

*United States Department of Defense, Joint Chiefs of Staff. Joint Publication 1 (JCS Pub 1). (Available online at: http://www.dtic.mil/doctrine/jel/new pubs/jp1.pdf.)

*United States Department of the Navy. "Forward ... From the Sea." Navy-Marine Corps White Paper. Washington, DC: 1994. (Available online at: www.chinfo.navy.mil/navpalib/policy/fromsea/ffseanoc.html.)

*United States Department of the Navy. "...From the Sea." Navy-Marine Corps White Paper. Washington, DC: 1992. (Available online at: http://www.chinfo.navy.mil/navpalib/policy/fromsea/fromsea.txt.)

*United States Department of the Navy, Military Sealift Command. "Communications Policy and Procedures Manual," COMSC Instruction 2000.2 CH-1. (Available online at http://www.msc.navy.mil/instructions/.)

United States Department of the Navy, Naval Service Training Command, Naval Reserve Officers Training Corps. "Introduction to Naval Science" Curriculum Guide (current revision).

United States Department of the Navy, Naval Service Training Command, Naval Reserve Officers Training Corps. "Sea Power and Maritime Affairs" Curriculum Guide (current revision).

*United States Department of the Navy, Naval Doctrine Command. "International Regional Naval Control of Shipping," EXTAC 1013 (Rev. A), February 1997.

*United States Department of the Navy, Office of the Chief of Naval Operations. "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships," ATP 2, Vol. II, June 1990.

*United States Department of the Navy, Office of the Chief of Naval Operations. "The Commander's Handbook on the Law of Naval Operations," NWP 9 (Rev. A), October 1989.

*United States Department of the Navy, Office of the Chief of Naval Operations. "MSC Handbook on Replenishment at Sea," NWP 14-2, August 1979.

*United States Department of the Navy, Office of the Chief of Naval Operations. "Naval Cooperation and Guidance for Shipping," NTTP 3-07.12.

*United States Department of the Navy, Office of the Chief of Naval Operations. "Replenishment at Sea," NWP 14 (Rev. E), March 1993.

*United States Department of the Navy, Office of the Chief of Naval Operations. "Surface Ship Survivability," NWP 3-20.31, November 1996.

United States Department of Transportation, Maritime Administration. "Compilation of Maritime Laws," April 2004. Includes "The Merchant Marine Act of 1936," "The Maritime Security Act of 2003," "The Shipping Act of 1984," and Related Acts (as amended through the First Session of the 108th Congress). Washington, DC: GPO, 2004. (Hard copy available as Instructor

Reference. Also available online at: http://www.marad.dot.gov/publications/Compilation%20of%20Maitime%20Law%2004/Compilation%20Maritime%20Laws.pdf.)

*United States Department of Transportation, Maritime Administration. "Maritime Administration Emergency Operations" (Operations Plan 001A), September 1990. (Also see info at www.marad.dot.gov/Publications/security.htm.)

*United States Government, National Imagery and Mapping Agency. "Radio Navigational Aids, Publication 117," 1997.

*United States Office of the White House. "A National Security Strategy for a New Century," Presidential White Paper, May 1997. Washington, DC: GPO, 1997. (Available at http://www.fas.org/man/docs/strategy97.htm.)

D. **SUPPLEMENTAL REFERENCES**

*Kaplan, Philip and Jack Currie. Convoy: Merchant Sailors at War 1939-1945. Annapolis, MD: Naval Institute Press, 1998.

*Pemsel, Helmut. A History of War at Sea: An Atlas and Chronology of Conflict at Sea from Ancient Times to the Present. Trans. G. D. G. Smith. Annapolis, MD: Naval Institute Press, 1989.

*Runyon, Timothy J. and Jan M. Copes, ed. To Die Gallantly: The Battle of the Atlantic. Boulder, CO: Westview Press, 1994.

*United States Department of Defense, Joint Chiefs of Staff. "Concept for Future Joint Operations: Expanding Joint Vision 2010," May 1997. (Available online at: www.dtic.mil/jointvision/history/cfjoprn1.pdf or from Commander, Joint Warfighting Center, Building 96 Fenwick Road, Ft. Monroe, VA 23651-5000.)

*United States Department of Defense, Joint Chiefs of Staff. "Joint Vision 2010," July 1996. (Available from Commander, Joint Warfighting Center, Building, 96 Fenwick Road, Ft. Monroe, VA 23651-5000, or online at: http://www.dtic.mil/jointvision/history/jv2010.pdf.)

*United States Department of the Navy, Naval Surface Reserve Force. "Information Booklet for Naval Reserve Officers in the Merchant Marine Individual Ready Reserve Group," COMNAVSURFRESFOR P1534.1. (Available from COMNAVSURFRESFOR at surfn14a@cnfr.nola.navy.mil.)

*Whitehurst, Clinton H., Jr. The U. S. Merchant Marine: In Search of an Enduring Maritime Policy. Annapolis, MD: Naval Institute Press, 1983.

E. **SUPPLEMENTAL PERIODICALS** (regular subscriptions recommended)

*Navy League of the United States. Almanac of Seapower. (Annual yearbook edition of "Seapower." Available online at: http://www.navyleague.org/sea_power/almanac_jan_04.php.)

*Navy League of the United States. "Seapower." (Monthly magazine)

*Royal United Services Institute for Defense Studies. "Armed Forces Journal International." (Monthly magazine)

*United States Department of Defense. “Defense.” (Quarterly magazine)

*United States Department of the Navy. “Naval War College Review.” (Quarterly review)

*United States Department of the Navy. Commander, Naval Surface Reserve Force, Merchant Marine Reserve Program Manager (COMNAVSURFRESFOR Code N14). “Merchant Marine Reserve Newsletter” (series).

*United States Naval Institute. “Proceedings.” (Monthly magazine)

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NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

RECOMMENDATIONS FOR THE INSTRUCTOR

1. This curriculum guide provides guidance for the Naval Science instructor in organizing, preparing, and presenting the Naval Science for the Merchant Marine Officer (MMO) course. Most active duty Navy officers have received little or no background on the Merchant Marine and the workings of the Naval Reserve. To adequately teach this course, you will need to acquire a working knowledge of both. Included are individual lesson guides that outline the background information, general principles, and basic procedures that officers of the U.S. Merchant Marine must know to successfully operate their ships as naval and military auxiliaries. The course balances an overview of the merchant marine's role in U.S. national security with an introduction to the hands-on skills merchant marine officers need to operate and communicate with the Navy and other armed forces. Instructors should keep in mind that the course is intended to familiarize students with naval strategy, organizations, and operations, and not to qualify them to perform specific naval auxiliary tasks.

2. This publication contains learning objectives and lesson guide material for each Professional Core Competency objective listed. The Navy competency objectives have been supplemented with additional Merchant Marine competency objectives unique to this course, which apply to all merchant marine officers receiving their licenses through a state maritime academy or the U.S. Merchant Marine Academy program. Some competency objectives addressed in the MMO curriculum may be covered by other courses required for graduation or licensing at the instructor's academy. In such cases, Naval Science instructors are authorized to tailor their course syllabi to avoid unnecessary duplication.

3. In preparing individual lesson plans, instructors are expected to consult the references listed in this guide to substantiate their treatment of each topic area addressed in the curriculum. Instructors should supplement the material contained in this guide to enhance the student's learning experience (e.g., by preparing additional instructional aids and audiovisual materials, conducting field trips, arranging for guest speakers, etc.). The instructional time allotted for each lesson in the table of lesson topics is an approximate guide to assist instructors in developing a syllabus and scheduling the course. While the course was designed as a three-credit, one-semester course (three hours a week for 15 weeks), there are no specific requirements for hours of instruction in this curriculum. Instructors may adjust their syllabi and the depth of material presented in each lesson to fit their class schedules, provided the students have time to master all competency objectives.

4. This course guide should be a living document. The Course Coordinator will frequently review and update it to meet the rapidly changing national security environment and situation of the maritime industry. All instructors are encouraged to contact the Course Coordinator with questions on recent developments, on where to find more information on specific topics, on forthcoming changes, and so forth. Your professional assistance is required to help the Course Coordinator fend off obsolescence. Please inform the Course Coordinator of any new references, materials, or recent developments that would enhance the curriculum or help to keep it current.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 1 **HOURS: 1**

TITLE: Course Introduction

I. Learning Objectives

A. The student will understand the academic and administrative requirements of the course.

B. The student will understand the classroom policies of the instructor.

C. The student will explain the professional importance of naval science education to the licensed merchant marine officer.

D. The student will be familiar with the major themes and topics covered in the course.

II. References and Texts

A. Instructor References

1. Academy Course Catalog

2. OPNAVINST 1534.1 (Series), "Merchant Marine Reserve, U.S. Naval Reserve Program"

3. Compilation of Maritime Laws

4. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion

B. Procedural and student activity options: Use an icebreaker to make students comfortable with each other and the instructor.

V. Presentation

A. Instructor introduction and background.

B. Course mechanics and administration.

1. Course outline and syllabus

2. Reading assignments and homework

3. Class participation in discussions and exercises.

4. Policies on testing and grading

5. Counseling procedures and office hours

C. Introduce purpose of naval science requirements in maritime academy curriculum. Discuss why civilian merchant marine officers need to know about the Navy.

1. "Merchant Marine Act of 1936": "It is necessary for the national defense… that the United States shall have a merchant marine…capable of serving as a naval and military auxiliary in time of war or national emergency…" (quoted from "Merchant Marine Act, 1936," Title I, page 1).

2. Free use of the sea is critical to U.S. military and economic security, as well as foreign policy objectives.

3. The U.S. Navy protects friendly merchant vessels in war zones, but needs their cooperation and knowledge of wartime sailing procedures to carry out this mission effectively.

4. The U.S. military needs sealift capability for forward defense. Licensed U.S. merchant officers on U.S. flagged vessels are the primary components of sealift. The Military Sealift Command (MSC) manned by civilian merchant mariners is critical to supporting the Navy in all of its mission areas by providing logistic support to the Navy.

D. Introduce main course themes and relate them to learning objectives and the importance of the merchant marine to the Navy.

1. This course will:

a. Introduce the Merchant Marine Reserve program in the U.S. Naval Reserve.

b. Explore the origins of U.S. sea power and the importance of the merchant marine in its growth.

c. Discuss the fundamental interest of the United States and our potential adversaries.

d. Examine the organization and missions of the U.S. Armed Forces and the critical role of the merchant marine.

e. Discuss the current status of the merchant marine.

f. Discuss merchant ship employment in wartime and their role in national defense.

g. Examine how merchant ships defend themselves, communicate with the Navy, and organize themselves for efficiency and effective protection in hostile areas.

h. Familiarize the students with Naval Control and Protection of Shipping Procedures and the Navy-Merchant Marine relationship.

2. Relate above themes to learning objectives for your class by focusing on:

a. Importance of the Merchant Marine to National Security and the Navy.

b. Desire for the Navy to include all licensed officers in the Merchant Marine Reserve.

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LESSON GUIDE: 2 **HOURS: 1**

TITLE: Merchant Marine Reserve/U.S. Naval Reserve Program Brief

I. Learning Objectives

A. The student will be familiar with the origin, purpose, missions, and basic organization of the Merchant Marine Reserve/ U.S. Naval Reserve (MMR/USNR) program.

B. The student will identify the incentives and requirements for participation in the MMR/USNR training program at your academy as a Student Incentive Payment (SIP) or direct commission candidate.

C. The student will understand the obligations, basic training requirements, eligibility requirements, benefits, promotion opportunities and responsibilities of service as a commissioned officer in the MMR/USNR.

II. References and Texts

A. Instructor References

1. Academy Course Catalog

2. CNETINST 1534.1 (series), "Regulations and Guidance for the Administration and Management of the Department of Naval Science at Maritime Academies, Colleges, and Schools"

3. MMR website: http://reserves.navy.mil

4. OPNAVINST 1534.1 (series), "Merchant Marine Reserve, U.S. Naval Reserve Program"

5. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides (available from Course Coordinator) or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options:

1. Lecture/discussion

2. Invite MMR officer in area as guest speaker.

3. Can also be used as a MMR/SIP program brief to incoming freshman as part of orientation or at another suitable time during their first year on campus.

B. Procedural and student activity options: Reading assignment/homework.

V. Presentation

A. Background on origins of the Naval Reserve

1. The MMR had its beginnings in 1913 when it was called the Naval Auxiliary Reserve. The original Merchant Marine insignia was prescribed in "Changes to Uniform Regulations, U.S. Navy, 1913, No. 10." In 1915, the Naval Reserve was organized into six classes:

a. Class I, Fleet Naval Reserve: Consisting of personnel having former active Naval Service.

b. Class II, Naval Reserve: Personnel serving in seagoing professions who had served at least 2 years at sea.

c. Class III, Naval Auxiliary Reserve: Personnel serving in or who had served in the Merchant Marine.

d. Class IV, Naval Coast Defense Reserve: Personnel capable of performing special and useful service to the Navy in time of war.

e. Class V, Volunteer Naval Reserve: Personnel qualifying for other reserve categories willing to serve without pay during peacetime.

f. Class VI, Naval Reserve Flying Corps: Personnel from the Naval Flying Corps.

2. In 1925, the Naval Reserve was reorganized and the Naval Auxiliary was renamed the Merchant Marine Reserve.

3. With the Merchant Marine Act of 1936, Departments of Naval Science were established at the four state maritime schools (California, Massachusetts, New York and Pennsylvania). This was expanded to include the U.S. Merchant Marine Academy when it opened in 1943.

4. MMR officers served with distinction in World War I and World War II.

5. 142 cadets from the MMR program lost their lives at sea during World War II.

6. MMR officers man the Military Sealift Command (MSC) and the Maritime Prepositioning Ships as civilian mariners. Without the MSC, the Navy could not deploy nor fight at sea.

7. Desert Shield/Desert Storm, as will future wars and conflicts, proved the durability and capability of the MMR program.

8. Graduates of MMR programs have gone on to serve with distinction on active duty (note famous alumni from your academy) and with NASA (FT Schuyler and USMMA each had a space shuttle pilot with NASA in 2000).

9. The current program was established by the Maritime Education and Training Act of 1980.

B. Mission of the MMR/USNR

1. Maintain an organization of qualified merchant marine officers composed of a corps of actively sailing members trained to operate merchant ships as naval auxiliaries and a shore side cadre to support sealift readiness.

2. Maintain a cadre of officers with seagoing skills for naval reserve mobilization.

3. Support the Maritime Administrator.

C. Organization of the Merchant Marine Reserve Force

1. Merchant Marine Ready Reserve Group (MMRIRRG)

2. Selected Reserve (SELRES) Options

a. Merchant Marine Reserve Operational Command Headquarters (MMROCH) units

b. Naval Coordination and Guidance of Shipping Office (NCAGS) units

D. The MMR program at your academy

1. How can I become a MMR/USNR officer?

a. Student Incentive Payment (SIP) Program/Training and Service Agreement (TSA)

b. Direct Commission Program

c. Transfer of licensed U.S. merchant marine officers from other services or communities

d. Program eligibility is contingent upon maintaining a valid USCG License.

2. Application process and eligibility for SIP Program. (For current status, check with your academy SIP officer.) Once in the SIP program, the student cannot "double dip" into other branches of the military commissioning program with out first getting permission from the Program Office (CONAVSURFRESFOR N14) in New Orleans.

3. Application process and eligibility for a direct commission.

4. MMR Training Program. Discuss the career path, course work, and training requirements for SIP and Direct Commission students at your academy.

5. Commissioning options and service obligations for MMR/USNR Midshipmen.

a. Active Duty Navy

b. IRR/SELRES

D. Training requirements for MMRIRRG and SELRES participants

1. Sailing requirements: 4 months every 2 years for MMRIRRG.

2. Regular reserve drill for SELRES: 2 days per month. Not required for MMRIRRG.

3. Active Duty Training (ACDUTRA)/Annual Training (AT) requirements: 2 weeks each year. Review AT options from MMR web page.

4. Renew/upgrade license by the five-year point of obligation.

5. Complete a Navy physical exam at your five-year anniversary.

6. Serve in the MMRIRRG for at least 8 years.

E. MMR/USNR Career Opportunities and Benefits

1. Promotion

2. Retirement

3. Reserve Benefits

4. Training on ACDUTRA/AT

5. Opportunity to stay active in one of the most exciting careers in the world -- the U.S. Navy.

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LESSON GUIDE: 3 **HOURS: 1**

TITLE: Introduction to Seapower and Maritime Affairs

I. Learning Objectives

A. The student will know key themes that thread throughout U.S. maritime and naval history.

B. The student will know that strategic doctrines guiding U.S. naval strategy continually change.

II. References and Texts

A. Instructor Reference: Sea Power: A Naval History

B. Student Text: None

III. Instructional Aids: Syllabus handout with objectives

IV. Suggested Methods and Procedures

A. Method options: Lecture/Discussion

B. Procedural and student activity options: None

V. Presentation

A. Key themes of U.S. maritime and naval history

1. The Navy as an instrument of U.S. foreign policy

a. 19th Century: Commercial expansion/showing the flag.

b. 20th Century: "Making the world safe for democracy."

c. Mahanian "command of the sea" through battle fleet engagements.

d. "Power projection" throughout the world, especially beyond Europe.

e. 21st Century: Sea Power 21 and "Network-Centric" Warfare.

2. Interaction between Congress and the Navy

a. Funding is the crucial issue in every era.

b. Congressional attitudes determine the size of the Navy, as well as its composition.

3. Interservice relations

   a. A certain tension has always existed between the Army and the Navy, compounded by the creation of an independent Air Force.

   b. This tension at times has impeded successful execution of strategies.

   c. The goal always has been a cooperative effort between the services.

   d. In the 1980s and 1990s, an intensive effort was made by the Congress and the Department of Defense to achieve maximum interservice cooperation or "jointness."

   e. In the 1990s and early 2000s, partly as a result of the Revolution in Military Affairs (RMA) in the 1990s, the services were called upon as rarely before to operate "jointly" under newly created joint commands possessing power almost equal to that of the JCS.

4. Technology

   a. Categories: Hull, armor, ordnance, propulsion, communications (i.e., "sensing").

   b. Alternate categories: Surface, subsurface, air, space, communications (including "signals intelligence" or SIGINT).

   c. The relationship between technology and strategy is symbiotic: Changes in one induce anticipated and unanticipated changes in the other.

5. Leadership: Types of leaders

   a. Are the characteristics of great combat leaders similar or essentially dissimilar to those of distinguished "desk-bound" strategists and administrators?

      (1) Does the Navy need both at all times?

      (2) How has the Navy attempted to select and groom great leaders?

   b. The students will study representative American naval leaders and assess the qualities of the greatness, the reasons for their successes, and the instances where they failed.

6. Strategy and tactics: The Navy at war

a. Definitions of strategy have varied over time.

(1) Today's definition differs from that of Alfred Thayer Mahan, although its roots lie in his thinking and writings.

(2) The students should be asked to explain their conception of strategy and to refine it throughout the course.

b. Tactics differ from strategy, but it is not always clear precisely how.

c. Naval wars will be studied in order to comprehend the interaction between national policy, alliance systems, naval strategy, leadership, logistics, and popular opinion.

7. Naval Doctrine -- Its evolution over time

a. In 1890, Captain Alfred Thayer Mahan advocated that the U.S. Navy abandon its historic doctrine of guerre de course and commerce raiding in favor of a battle fleet doctrine composed of:

(1) Capital ships

(2) Fleets of capital ships

(3) Fleet engagements in search of decisive victory

b. Mahan's doctrine guided the U.S. Navy from the 1890s until the 1990s and, thereafter, has continued to have a strong influence on policy and strategy.

c. Students today must constantly question the continued applicability of Mahan in an era of Network-Centric Warfare and the radically new technology it implies, as well as in regard to modern geopolitical realities.

d. The maritime doctrine of the British writer Sir Julian S. Corbett must also be studied as it differs from Mahan in the key area of the need for sea power to complement land power. The emphases of modern-day "joint" and "netted" operations encourage consideration of the teachings of Corbett to balance those of Mahan.

8. Prospects for the future missions of the Navy

a. Relations with "developing nations" in a multi-polar world have become preeminent since the

end of the Cold War and especially since President George W. Bush's proclamation of a War on Terrorism following the attack on the World Trade Towers on 11 September 2001.

b. Russia and the successor states to the Soviet Union will require evolving and altering naval strategies on the part of the United States.

c. "Rogue states" (e.g., North Korea and Iran) will require special American naval strategies.

d. China will pose the greatest challenge to American naval hegemony in the western Pacific Ocean ("WESTPAC"), and it will have to receive special accommodation in the national U.S. naval policy and strategy.

e. The future facing the United States Navy will be far more complex than anything previously experienced, so the selection of applicable historical precedents by American naval strategists and planners will have to be extremely judicious.

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LESSON GUIDE: 4 **HOURS: 2**

TITLE: American Seapower, 1775-1861

I. Learning Objectives

A. The student will know the significant milestones in the history of the evolution of the U.S. Navy and Marine Corps, including the prominent leaders and their contributions.

B. The student will know the role U.S. Naval force played in the national strategies and policies of the United States in peacetime expansion and war through the present time.

II. References and Texts

A. Instructor References

1. The Abandoned Ocean, Chapters 1-3

2. Sea Power: A Naval History, Chapters 4, 5, 9, and 10

3. In Peace and War: Interpretation of America Naval History, 1775-1978

4. To Shining Sea: A History of the United States Navy, 1775-1991

5. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Videos:

1. "The History of the U.S. Navy: The American Revolution through the Quasi War (1775-1800)"

2. "The History of the U.S. Navy: The Barbary Wars through the War of 1812 (1801-1815)"

3. "The History of the U.S. Navy: End of the War of 1812 through the Civil War (1815-1865)"

B. VCR/Monitor

C. Handouts

D. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

E. Whiteboard/Chalkboard

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

1. This is a broad-based lecture on the history of American sea power and its influence upon world events. When teaching this course and others on the history of sea power, reinforce the contribution of the merchant marine and its ties with the Navy.

2. Show video segments to illustrate your points.

B. Procedural and student activity options: Write a short paper on some aspect of the history of the U.S. Navy or Merchant Marine.

V. Presentation

A. Colonial Period, 1492-1775

1. Colonization of the New World by European sea powers: British colonies in North America tied closely to England by the triangular trade routes; North America was also a primary source of Naval stores (oak, pine tar, hemp) for England.

2. British Navigation Acts were cabotage laws, preventing colonial shippers from carrying certain products (i.e., tobacco/rice) directly to Europe, contributing to the colonists' dissatisfaction with British rule.

3. America heavily reliant upon the sea for transportation.

B. The American Revolution, 1775-1783

1. Continental Navy and Marine Corps were established in 1775 under the command of Commodore John Barry. Primary mission was commerce raiding. Source of ships and manpower was the merchant marine.

2. Privateering (i.e., when a government issues letters of mark to merchant ships to attack enemy merchant ships) was the principal means of commerce raiding. Capt Daniel Conyingham was the most successful merchant master turned privateer.

3. Fledgling Navy had several significant accomplishments:

a. 1776, Marines landed at New Providence, Bahamas, to capture ammunition stored on the island of Nassau.

b. 1776, Battle of Valcour Island, Lake Champlain-- General Benedict Arnold fought a delaying action on the lake stopping the British southward march which resulted in an American victory at Saratoga in 1777.

c. *BonHomme Richard* vs. *Serapis* 1779, off Flamborough Head -- John Paul Jones uttered the phrase, "I have not yet begun to fight," starting an American Naval tradition. Jones lost his ship, the *BonHomme Richard,* while capturing the *Serapis*, a British frigate.

d. Navy and privateer attacks on British shipping lead to the introduction of convoys.

e. Battle of the Virginia Capes, 1781 -- The French fleet under the Comte de Grasse defeated the British fleet isolating Cornwallis at Yorktown, leading to his surrender to George Washington.

f. Sea power confrontations between the French and Dutch against the British turned the American Revolution into a world war with several major naval engagements fought in the Caribbean.

g. The Navy and Marine Corps were disbanded in 1785 due to fiscal constraints. Most service men returned to their previous jobs in the Merchant Marine.

C. Rebirth of the Navy, 1794-1812

1. The Constitution called for a Navy. The Navy was established in response to the threat of the Barbary Pirates to merchant shipping with the Naval Act of 1794, authorizing construction of six frigates.

2. U.S. Merchant Marine flourished at this time due to war in Europe and availability of seaman and materials to build ships in America.

3. Quasi-war with France, 1798-1800: American response to French seizures of U.S. vessels led to an undeclared war. First victories of the *USS Constitution* under Capt Truxton.

4. War with Tripoli, 1801-1805: U.S. refused to pay bribes to protect its shipping -- first use of American Gun Boat Diplomacy. The first *USS Enterprise* a sloop of war served with distinction.

D. War of 1812, 1812-1815

1. British violating U.S. rights on the high seas. U.S. Navy could not challenge the Royal Navy at sea but

acquitted itself well in commerce raiding and in a series of frigate duals featuring the *Constitution*.

2. A series of naval battles on Lake Erie, Lake Ontario, and Lake Champlain stopped all British attempts to invade the U.S. from Canada. Captain Lawrence of the *USS Chesapeake* uttered the phrase, "Don't give up the ship," in its capture by the British. Oliver Hazard Perry flew these words on a flag on his ship, the *USS Lawrence,* in his victory in the Battle of Lake Erie.

3. Gunboats built by Thomas Jefferson for coastal defense were easily defeated by British frigates leading to the sacking of Washington D.C., and the landing of British troops in Louisiana in 1814.

E. Mexican War, 1845-46: U.S. Navy controlled the seas off the Mexican coast, effectively blockading that country.

1. Amphibious assaults were conducted at Vera Cruz and Tampico.

2. Navy assisted in capture of California ports.

F. Expansion and Exploration, 1815-1861

1. Expansion of U.S. maritime interest

a. Increased trade with the Far East and westward expansion led to deploying the Navy to the Pacific. In 1835, Commodore Kearny negotiated trading rights with China.

b. Wilkes' expedition (1838-1842) explored and charted the Pacific coast.

c. Commodore Perry (1854) opened Japan to the west.

2. Ocean commerce expanding around the world, whaling, trade, coupled with cheap ship building in the U.S. lead to an expansion of the merchant marine.

a. First U.S. cabotage law passed in 1817.

b. U.S. shipping carried 80% of U.S. foreign trade from 1800-1840.

c. Americans were the innovators in ship design (i.e., the Clipper ships).

3. The Monroe Doctrine established the United States as a power in the Americas. Without the Navy, this would have not been enforceable.

G. Technology

1. Ship building

a. American shipwrights developed the fastest and most efficient sailing ships. Able to do this with the large quantities of natural resources in America.

b. 19th century brought steam propulsion and iron ships. U.S. lagged behind Europe due to U.S. being behind in industrial production and ship builders focusing on wooden sail craft.

2. Armament

a. Invention of the exploding shell spelled the end of wooden war ships; French ship *La Gloire* was the first iron war ship.

b. More powerful guns (i.e., Dahlgren guns) ended the classic "Ship of the Line" that dominated war at sea for the previous 200 years.

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LESSON GUIDE: 5 **HOURS: 2**

TITLE: American Seapower: The Civil War and Development of Naval Theories, 1861–1900

I. Learning Objectives

A. The student will know the significant milestones in the history of the evolution of the U.S. Navy and Marine Corps, including the prominent leaders and their contributions.

B. The student will know the role the U.S. naval force played in the national strategies and policies of the United States in peacetime expansion and war through the present time.

C. The student will comprehend the contributions of 19th/early 20th century naval strategists and relate their concepts to current situations.

II. References and Texts

A. Instructor References

1. The Abandoned Ocean, Chapters 4 and 5

2. The Influence of Sea Power Upon History

3. Sea Power: A Naval History, Chapters 12, 13, 14, 15, and 18

4. In Peace and War: Interpretation of American Naval History, 1775-1978

5. To Shining Sea: A History of the United States Navy, 1775-1991

6. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Videos:

1. "The History of the U.S. Navy: End of the War of 1812 through the Civil War (1815-1865)"

2. "The History of the U.S. Navy: End of the Civil War to World War II (1865-1939)"

B. VCR/Monitor

C. Handouts

D. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

E. Whiteboard/Chalkboard

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

1. This is a broad-based lecture on the history of American sea power and its influence upon world events. When teaching this course and others on the history of sea power, reinforce the contribution of the merchant marine and its ties with the Navy.

2. Show video as a summary of all events.

B. Procedural and student activity options: None.

V. Presentation

A. The Civil War

1. Federal Navy controlled the seas with a blockade of southern ports as part of the ANACONDA plan of isolating and dividing the Confederacy. Strategy called for amphibious assaults to seize important ports.

2. South pursued a strategy of commerce raiding and blockade running. This caused many American shipping companies to reflag their vessels to prevent capture and sinking by the south. Over 600 merchant ships were reflagged during the Civil War. Captain Raphael Semmes of the *CSS Alabama* captured 68 Union ships in 18 months.

a. South relied on wonder weapons to defeat the Union.

(1) *CSS Virginia (USS Merrimac)*, the first Iron clad warship, had limited success in Hampton Roads until the *USS Monitor* arrived neutralizing it. *Merrimac* was later scuttled to avoid capture. They attempted to repeat this in Mobile Bay with the *CSS Tennessee*, but failed again.

(2) *CSS Hunley* was the first successful submarine attack, although the *Hunley* was lost in its attack.

(3) South developed the contact and wire controlled mine (called torpedoes at the time) to defend harbor entrances.

b. North developed:

(1) Turret, guns in a trainable mount, on the *Monitor.*

(2) Navy expanded rapidly for blockade and escort duties.

(3) Heavy use of "riverine" warfare to support the Army in campaigns along the Mississippi, Cumberland, James, and York rivers.

(4) Navy captured most Southern ports with amphibious landings with the Army.

(5) Largest Navy in the world in 1865.

(6) First Navy Admiral, David Farragut, captured New Orleans first and then completed the isolation of the south with his victory at Mobile Bay in 1865, where he uttered the famous saying, "Damn the torpedoes; full speed ahead."

3. Impact on the Merchant Marine:

a. Southern commerce raiding forced the American merchant marine to seek protection under neutral flags, starting the demise of American shipping that would not rise again until 1917. Threat of commerce raiders raised shipping insurance and cost of carrying cargo in American ships. Most ships were shifted to the British Flag.

b. Most modern merchant ships were pressed into service by the Union Navy.

c. The American merchant marine never responded to the new technologies of steam propulsion and iron hulls, and continued to build obsolete wooden sailing vessels.

d. American crew costs began to increase, making it noncompetitive with the crews of European Empires.

B. Armored ships were ordered in the 1880s by the Navy for the ABCD fleet (i.e., *Atlanta, Brooklyn, Chicago,* and *Dolphin),* moving the Navy away from sail and wooden ships to armored vessels with steam propulsion. Civil War showed that wooden hull vessels could not stand up to new weapons and iron-clad warships. Merchant navy remained primarily wooden, sail-powered ships falling behind world competitors.

C. Alfred Thayer Mahan (1840-1914), Father of Naval Theory

1. Biographical background

2. He drew on his experiences in the Civil War and a study of British sea power to formulate a maritime doctrine for the United States in his book, The Influence of Sea Power Upon History, 1660-1783.

3. Mahan's Assumptions

   a. Strategy is unchanging, while tactics change in response to technology.

   b. Basic geopolitical factors determine whether a nation will develop sea power. Mahan considered it necessary for the nation to posses six elements of sea power, which are:

      (1) Geographical location

      (2) Physical conformation

      (3) Extent of territory

      (4) Adequate population to man the navy and merchant marine

      (5) National character (seafaring people)

      (6) Character of government (democracy conducive to sea power)

4. Mahan's formula for national power

   a. Maritime commerce in country's own ships.

   b. Establish and exploit a colonial empire as a source of raw materials and a market for manufactured goods.

   c. Command of the seas with:

      (1) A capital fleet (i.e., Battleships)

      (2) Overseas bases

      (3) Concentrate capital fleet; use central position to meet and defeat enemy forces on your own terms in wartime.

   d. Mahan saw the U.S. as an island nation with a seafaring population and democratic government like Britain. He implied that the U.S. could also become a dominant economic and political power in the world.

5. Mahan's Influence

a. Coincided with U.S. emergence as a world power under McKinley and Roosevelt.

b. Rallied public support for modernizing the Navy.

c. Strongly influenced Germany and Japan into becoming emerging sea powers.

d. Influenced U.S. Navy to adopt a capital ship philosophy and to adopt sea control as its mission.

6. Critique of Mahan's Ideas

a. His ideas about sea power and economic sources of wealth were outdated by the time he put them forward. His idea of colony-based mercantilism was made obsolete by the advances in the Industrial Revolution.

b. Technological changes made uncontested control of the seas practically impossible in war. New weapons (e.g., airplane, submarine, torpedo) made it possible for land forces to project power over sea forces with few, if any, capital ships.

D. Sir Julian Corbett (1854-1922), British naval historian and strategist

1. Saw sea power as an appendage of national power and foreign policy; naval supremacy was not an end to itself (influenced by Clausewitz's theory that war is a political act).

2. Naval warfare is about securing a relative command of the sea (i.e., the right of passage for one's naval and merchant vessels). He used the term working control of the sea or sea control.

3. Victory at sea is not enough to win wars; also need an effective army.

4. Sea control is best used to launch amphibious assaults and to avoid committing all of a nation's resources to war, as well as protecting one's own commerce and interrupting the enemy's.

5. Set forth three complementary pairs of missions for a navy. Mission chosen depends upon the nation's strategic situation:

a. Sea control/sea denial

b. Support land forces/hinder land forces

c. Protect sea lanes/interrupt enemy sea lanes

6. Over-emphasized the importance of amphibious warfare and the ability to defend commerce at sea.

E. Spanish-American War (1898) and the Great White Fleet (1905)

1. Both served to prove to the U.S. that Mahan was correct.

2. Spanish-American War was decided upon by two naval conflicts:

a. Admiral Dewey and the Battle of Manila Bay

b. Admiral Schely and Sampson and the Battle of Santiago

In both cases the loss of the Spanish fleet gave way to victory ashore to an inferior American Army.

3. Fear of Spanish invasion of U.S. led to several states forming Naval Militias.

4. Great White Fleet set sail from Hampton Roads in 1905 to circumnavigate the globe, demonstrating to the world that the United States was now a world power.

a. Navy learned it would now need colliers to refuel the ships away from established bases. First colliers were civilian-manned.

b. Led to building of Naval bases around the world to support the fleet.

5. First true submarine was developed by George Holland and, married with the Whitehead torpedo, changed war at sea forever.

6. British launched the *HMS Dreadnought,* a battleship with its main battery in turrets (armored, screw propelled) that changed war at sea forever.

7. The "Torpedo Boat Destroyer" was developed to counter torpedo boat threat to the battle fleet, eventually becoming known as the destroyer.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 6 **HOURS: 2**

TITLE: U.S. Navy in the 20th Century

I. Learning Objectives

A. The student will know the major historical facts in relation to sea power in the global wars 1914-1918 and 1939-1945, including the developments in submarine, amphibious, and air warfare at sea.

II. References and Texts

A. Instructor References

1. The Abandoned Ocean, Chapters 6, 7, and 8

2. Sea Power: A Naval History, Chapters 19, 23, 24, 26, 28, 29, and 30

3. In Peace and War: Interpretation of American Naval History, 1775-1978

4. To Shining Sea: A History of the United States Navy, 1775-1991

5. Naval Science for the Merchant Marine

6. "World War II: The War Against Japan" (Available at: http://www.army.mil/cmh-pg/books/amh/AMH-23.htm.)

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Videos:

1. "History of the U.S. Navy: End of Civil War to World War II (1865-1939)"

2. "History of the U.S. Navy: World War II at Sea (1939-1945)"

3. "The Men Who Sailed the Liberty Ships"

B. VCR/Monitor

C. Handouts

D. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

E. Whiteboard/Chalkboard

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

1. This is a broad-based lecture on the history of American sea power and its influence upon world events. When teaching this course and others on the history of sea power, reinforce the contribution of the merchant marine and its ties with the Navy.

2. Use video segments to illustrate points made in the lesson.

B. Procedural and student activity options: None.

V. Presentation

A. Founding of the Naval Reserve

1. With the shift from sail to steam, the Navy needed specialized ships to support the fleet at sea. Colliers were manned by civilian vice navy crews and laid the foundation of the Naval Reserve.

2. In 1913, the Naval Reserve was established -- one of the 6 categories being the Naval Auxiliary Reserve, which was the forerunner of the Merchant Marine Reserve.

3. The Merchant Marine continued to shrink, as foreign crews were cheaper to employ.

4. American ships were under the British flag, as Asian crew members from the British empire were cheaper to hire than American crews.

B. The Great War (1914-1918) -- The first large scale test of Mahan’s theories. All of the belligerents were building capital ship (battle ship) fleets for the Mahanian ultimate battle at sea.

1. Gallipoli campaign (1915) -- Unsuccessful British attempt to knock Turkey out of the war by seizing the Turkish straits. Discredited amphibious assaults until World War II.

2. Battle of Jutland (1916) -- The much sought after Mahanian battle between capital ships that was inconclusive. If Britain lost its fleet, it would loose the war and did not seek another confrontation. Germany feared loosing its fleet and opening a front in the North Sea, also preventing confrontation. The British could blockade Germany from a distance with out risking its fleet.

3. U-boat campaign and surface raiders by Germany were an attempt to isolate Britain and starve it into submission.

    a. First unrestricted U-boat campaign ended in 1915 when the United States threatened war over the sinking of the *Lusitania.*

    b. Second campaign (1916) ended in face of U.S. threat of war.

    c. Third campaign brought the United States into the war and almost starved Britain into submission. U-boats sank 600,000 tons of shipping a month (2 ships per day).

        (1) Britain adopted convoy tactics at the recommendation of Admiral W. S. Sims, USN, and developed ASDIC (early sonar) to counter the U-boat. 120 U-boats were sunk in one year, and all American troops arrived safely in France.

        (2) The British originally opposed convoys, as they would present large numbers of targets to single U-boats. They were wrong.

    d. Germany's success in commerce raiding (guerre de course) disproved Mahan's concept of "command of the sea" was not needed for victory against a naval power. U-boats sank 5,234 merchant ships, 10 battleships, 18 cruisers, 20 destroyers and 9 submarines. Proving Corbett's theory of denying the enemy use of the sea could be an effective military strength.

4. Technological improvements included the development of the radio (wireless communication) and the airplane (including first shipboard launch), greatly expanding the effective distances for engaging and controlling naval forces and revolutionizing naval tactics in the years to come.

5. United States trade came to a near standstill in 1914-1915, as there was no American merchant marine and the ships sailing under the British flag of convenience were either sunk by U-boats or supporting British war efforts.

    a. The Merchant Marine Act of 1916 called for the Federal government to build and maintain a merchant marine capable of supporting the nation in peace and in war.

b. The government entered into a massive shipbuilding program, building steel, wood, cement, and composite vessels.

c. Ships were built too late for the World War but formed the backbone of the merchant marine in the 1920's and 1930's.

d. The government used subsidies to keep the American flag at sea.

C. The Inter War Period

1. Washington and London Treaties on Naval Disarmament were attempts to limit post war naval construction to avoid a naval arms race. Led to the development of aircraft carriers, submarines, and destroyers, as these ships were not mentioned in the treaties.

2. Congress recognized the vitality of the shipping industry as a means to provide sealift for wartime defense by passing the Merchant Marine Act of 1920, to include:

a. The Jones Act, establishing cabotage laws to bar foreign-flagged shipping in coastwise and inter coastal trade.

b. Sold off surplus government vessels to subsidize the industry.

3. The Merchant Marine Act of 1936 was an attempt to prepare for war and help the country out of depression. The Act created several federal subsidy programs that supported the shipping and shipbuilding industries and established naval training requirements that ensured the U.S. Merchant Marine could effectively serve as a Naval Auxiliary during time of war and national emergency. Specifically, the Act created:

a. The Operating Differential Subsidy (ODS) program to financially compensate U.S. shipping companies when their vessels experienced financial losses due to substantial disadvantages in competition with vessels of foreign countries in international shipping.

b. The Construction Differential Subsidy (CDS) program to encourage U.S. ship owners to build ships in the more expensive U.S. shipyards by having the federal government pay the difference of what it would have cost to build such vessels in foreign shipyards.

c. The Capital Reserve Fund (CRF), later changed to the Capital Construction Fund (CCF), as a

tax sheltered account to help ship owners build or acquire more modern and capable vessels.

d. The Merchant Marine Reserve/U.S. Naval Reserve program to provide naval training for merchant marine officers. This ultimately led to the establishment of Departments of Naval Science at state maritime academies and the founding of the U.S. Merchant Marine Academy in Kings Point, NY.

D. Key Maritime Events of World War II

1. U.S. Navy entered the war in 1940 by escorting Allied convoys through the Western Hemisphere Defense Zone (East Coast to Iceland) to aid the British.

2. On 7 December 1941, the Japanese attack on Pearl Harbor leads the U.S. to declaring war on Japan. Germany, an ally of Japan, then declares war on the United States. Ships lost at Pearl Harbor are old battleships.

3. *HMS Repulse* and *HMS Prince of Wales* are sunk off Malaya, proving the vulnerability of battleships to air attack.

4. Battles of Midway and Coral Sea:

a. First naval actions in history where neither fleet saw the other;

b. Turned the tide in America's favor; and

c. Set the stage for the dominance of naval aviation over surface ships and submarines.

Surface battles adjacent to islands initially go to the Japanese; but with the U.S.'s use of radar, the tide is turned in our favor.

5. Capitalizing on the sinking of the Japanese fleet, the U.S. Joint Chiefs directed a two-pronged island-hopping campaign, led by Admiral Nimitz and General McArthur, to retake the Pacific and, ultimately (it is planned), to invade Japan. Under Admirals Spruance and Halsey, Marines land on Guadalcanal, Tarawa, Solomon Islands, Marianas, Okinawa and Iwo Jima, while Army conducts landings on New Guinea, Solomons, Gilberts, Marinas, Philippines and Okinawa. Naval air and sea firepower and logistics are crucial enablers in all battles.

a. Battle of the Philippine Sea -- American carrier aviators devastate Japanese carrier pilots in a single day, defending the beachhead on Guam.

b. Battle of Leyte Gulf -- Largest naval engagement in history, where American forces destroyed what remained of the Japanese Navy in several engagements. CVEs (escort carriers which were converted merchant ships) turned back a superior Japanese surface force, as well as providing Close Air Support to forces ashore.

6. U.S. submarines conduct commerce warfare on the Japanese merchant fleet, effectively destroying it and severing Japan from mainland Asia, the source of its raw materials.

7. Battle of the Atlantic is German commerce raiding against the allies. U-boats, warships and raiders (armed merchant ships) are used to isolate and starve Britain to the peace table; it fails.

a. U-boats operate in wolf packs controlled from ashore with great results. 142 USMMA cadets lose their lives due to U-boat attack.

b. Allies resort to convoys to maximize availability of escorts.

c. Use of aircraft armed with radar and direction-finding equipment turn the Battle of the Atlantic in favor of the allies. This enables the Allies to catch German U-boats on the surface. Germans develop the snorkel to allow U-boats to remain submerged and operate their diesel engines.

8. German surface navy is quickly neutralized and later scraped to support the U-boat campaign. Germans conquered Norway via amphibious assault but did not have the ability to cross the English Channel.

9. Allies use command of the sea and merchant shipping to invade North Africa, Sicily, Italy, and France. Massive sealift was required to support all of these invasions.

10. The Japanese resorted to suicide tactics (Kamikaze aircraft, boats and manned submersibles) to thwart the U.S. Navy but failed. Advances in radar, fire control, fused shells, sonar, torpedoes, and depth charges neutralized these threats.

11. Japan surrendered after detonation of atomic bombs at Hiroshima and Nagasaki.

12. World War II is the first and only "Total War" in that each side fought to completely dominate (conquer) its enemy with all of the resources it could muster.

13. Technological Developments:

    a. Aircraft carrier replaces battleship as focal point of fleet with its embarked aircraft.

    b. Submarine proved its role against shipping.

    c. Electronic advances (radar, sonar, communication) greatly expanded the war at sea in space and time.

    d. Atomic bombs opened the nuclear age.

    e. United States develops and exploits concept of Amphibious Warfare and constructs special ships to support amphibious assaults, such as the LST, LSD, LSI, and APA (a converted C-3 merchant vessel).

DEPARTMENT OF NAVAL SCIENCE
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NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 7 **HOURS: 2**

TITLE: American Seapower, 1945-1975

I. Learning Objectives

A. The student will know the significant milestones in the history of the evolution of the U.S. Navy and Marine Corps, including the prominent leaders and their contributions.

B. The student will know the role the U.S. Naval force played in the national strategies and policies of the United States in peacetime expansion and war through the present time.

C. The student will comprehend the effects of the National Security Act of 1947 on the role of the military.

D. The student will know the significant historical events of the Cold War period.

II. References and Texts

A. Instructor References

1. The Abandoned Ocean, Chapters 9 and 10

2. Sea Power: A Naval History, Chapters 31, 32, and 33

3. In Peace and War: Interpretation of American Naval History, 1775-1978

4. To Shining Sea: A History of the United States Navy, 1775-1991

5. Convoy: Merchant Sailors at War, 1939-1945 (optional)

6. To Die Gallantly: The Battle of the Atlantic (optional)

7. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

C. Student Reference: Sea Power: A Naval History, Chapters 31, 32, and 33

III. Instructional Aids

A. Videos:

1. "History of the U.S. Navy: The Cold War Navy (1945-1964)"

2. "History of the U.S. Navy: The Navy from Vietnam to the Present (1964-1996)"

B. VCR/Monitor

C. Handouts

D. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

1. This is a broad-based lecture on the history of American sea power and its influence upon world events. When teaching this course and others on the history of sea power, reinforce the contribution of the merchant marine and its ties with the Navy.

2. Use video segments to illustrate points made in the lesson.

B. Procedural and student activity options: None.

V. Presentation

A. Post War Era -- The end of World War II brought hopes for a long lasting world peace.

1. UN was established in 1945 to arbitrate disputes and prevent wars.

2. National Security Act of 1947

a. Combined the War and Navy Departments into the Department of Defense.

b. Established the Joint Chiefs of Staff as senior military advisor to the President and the Joint Command structure.

c. Created a separate Air Force.

d. In 1949, the Military Sea Transportation Service (MSTS), the forerunner to MSC, was created to combine all Army and Navy shipping under one organization. This was opposed by civilian shipping lines for several years.

3. All conventional military services were drastically cut, as the next war was seen as one that would be fought by long range jet aircraft equipped with nuclear weapons.

4. Revolt of the Admirals was an attempt by Navy flag officers to maintain a credible navy in a new nuclear world.

5. American shipping was strong at the end of the war with the demand for aid in world reconstruction. Led to making the USMMA permanent in 1956. To resurrect world trade, the U.S. allowed ships from wartime merchant fleet to be sold to American and foreign shipping lines.

B. Beginning of the Cold War -- The Cold War was a period of tension between the capitalist west and the communist east, led by the Soviet Union.

1. 1948 -- Berlin Airlift: Soviets attempted to drive the west out of Berlin by blockading the city.

a. City remained free by benefit of a large U.S.-led airlift of supplies.

b. U.S. threatened the use of nuclear weapons, but Soviets ignored the bluff.

2. 1949 -- U.S. and 11 other nations form the North Atlantic Treaty Organization (NATO), calling for mutual defense if one was attacked. U.S. implements policy of "containment," which will attempt to hold communists where they are and prevent expansion of communism to other countries.

a. Soviets then organized Eastern Europe into the Warsaw Pact to counter NATO.

b. The Truman Doctrine and Marshal Plan are implemented by the U.S. to aid reconstruction of non-communist European countries and reduce communist influence in Turkey and Greece.

c. China comes under communist rule when Chiang Kai-shek evacuates his followers to Taiwan.

C. Korea -- Korea was left divided at the end of World War II; communist-influenced North Korea invaded American-influenced South Korea on 26 June 1950. UN entered the conflict on the side of South Korea in a test of its mandate to end wars.

1. Navy role was of slowing and reversing the communist invasion of the south.

a. Close Air Support and Naval Gun Fire support greatly aided the American-Republic of Korea (ROK) effort to stop communist advance.

b. Command of the sea enabled the UN, using the U.S. Navy to keep the flow of supplies open to UN forces on the peninsula.

c. Command of the sea allowed U.S.-led forces to invade at INCHON, severing the communist supply lines, evicting their army from the south.

d. Sealift permitted moving American/UN forces from Japan and around the world to the Korean theater.

e. Korean conflict kept the military and civilian shipping lines heavily engaged.

f. Korea is the first "Limited War" in which neither side tries to completely dominate the other militarily but has certain goals it attempts to reach in the conflict.

2. Before Korea, military planners realized there was a threat from the Soviet Union and called for the conventional rearming of the United States. This coincided with the Korean Conflict and lead to several technological changes.

a. Jet aircraft

b. Advances in radar and communications

c. Nuclear powered submarines

d. Hydrogen Bomb

e. Cruise and ballistic missile technology.

D. The Cold War

1. Advances in nuclear technology, aircraft, aircraft carriers and missile technology brought the Navy into the role of strategic deterrence -- nuclear-armed aircraft on aircraft carriers and the ballistic missile submarines (SSBN) armed with submarine-launched ballistic missiles (SLBMS) in the early 1960s.

2. Nuclear-propelled submarines allowed subs to stay underwater indefinitely (limited by crew endurance and food); attack submarines (SSN) took on the role of tracking and shadowing Soviet SSBNs.

3. Peacetime naval presence became a vital tool in supporting pro-west, anti-communist states around the world. Began to fill a role in crisis response.

a. Seventh Fleet deployments to Taiwan and the Far East began in 1949.

b. Sixth Fleet deployments to Mediterranean began in 1948.

c. Deployments to the Middle East began in the 1970s, as Britain reduced its presence east of Suez.

d. Navy and Marines evacuated North Vietnam in 1954.

e. Navy and Marines landed in Beirut in 1958 to safeguard American lives.

f. Cuban Missile Crisis. Navy blockade forced Soviets to withdraw nuclear weapons from the island in 1962.

g. U.S. aid to Laos, Cambodia, and South Vietnam includes weapons and advisors to stem the spread of communism in Southeast Asia.

4. Conventional forces were sustained by the first ever peace time draft and prepared for a major land war in Europe.

5. Cold War tensions spread to the developing world.

a. Soviets and U.S. routinely provided top line weapons and advisors to client states.

b. Criteria to receive weapons was to adopt the supplier's political thought (on the surface at least).

c. Led to a series of small conflicts around the world where communist-backed forces battled capitalist-backed forces.

(1) Laos

(2) Cambodia

(3) Malaysia

(4) Philippines

d. Conflicts were focused in the developing world where the removal of European colonial rule left openings for different ideologies.

E. Vietnam Conflict was the culmination of these proxy wars. U.S. ground forces were committed after the "Gulf of Tonkin" resolution.

1. Navy support consisted of:

a. Aircraft strikes inland (power projection)

b. Logistic support to Marines and Army ashore (sealift)

c. Naval Gun Fire Support (power projection)

d. Riverine warfare (special operations/special warfare)

2. End of the Vietnam conflict resulted in a drastic cutback in the merchant fleet. Merchant Marine had not stayed abreast of new technologies or labor-saving devices, or kept its cost reasonable aiding in the shrinking of the merchant fleet. U.S. government did not maintain building and maintenance subsidies either, further hurting the fleet.

3. At the end of Vietnam conflict, the Navy was focused on protecting the Sea Lanes of Communication (SLOC) to Europe to support NATO.

4. In 1972, the first civilian-manned oilers were used to refuel Navy ships at sea, opening the door to civilian- manned ships in direct support of the Navy at sea.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 8 **HOURS: 2**

TITLE: American Seapower, 1975-1980s

I. Learning Objectives

A. The student will know the significant milestones in the history of the evolution of the U.S. Navy and Marine Corps, including the prominent leaders and their contributions.

B. The student will know the role the U.S. Naval force played in the national strategies and policies of the United States in peacetime expansion and war through the present time.

C. The student will comprehend the effects of the Goldwater-Nichols Department of Defense Reorganization Act of 1986 on the role of the military.

D. The student will know the significant historical events of the Cold War period.

II. References and Texts

A. Instructor References

1. The Abandoned Ocean, Chapters 11, 12, 13 and 14

2. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Videos:

1. "From the Sea"

2. "History of the U.S. Navy: The Cold War Navy (1945-1964)"

3. "History of the U.S. Navy: The Navy from Vietnam to the Present (1964-1996)"

B. VCR/Monitor

C. Handouts

D. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

E. Whiteboard/Chalkboard

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

1. This is a broad-based lecture on the history of American sea power and its influence upon world events. When teaching this course and others on the history of sea power, reinforce the contribution of the merchant marine and its ties with the Navy.

2. Use video segments to illustrate points made in the lesson.

B. Procedural and student activity options: None.

V. Presentation

A. Thawing of the Cold War

1. 1972 -- Relations established with China.

2. 1973 -- Arab-Israeli War brings Nuclear powers to brink of confrontation.

3. 1974 -- U.S. withdraws from Vietnam.

4. 1975 -- South Vietnam falls to North Vietnam.

5. 1976 -- Soviet Union becomes mired in Afghanistan.

6. 1979 -- Camp David Peace Accord initiates peace in the Middle East between Egypt and Israel.

B. Maritime Strategy

1. Iranian Revolution/Hostage Crisis of 1979-1980 showed that the U.S. military was not prepared to face a threat in a developing country. Botched rescue attempt showed that the military was not ready to work together. This led to a policy shift from defeating the global threat of Soviet communism to facing regional threats around the world, focusing on "joint operations" between the services in remote locations.

a. The Rapid Deployment Joint Task Force (RDJTF) was developed, supported by Maritime Prepositioning Ships (MPS) in critical parts of the world. U.S. Central Command later replaced RDJTF.

b. Shift in focus in Navy from SLOC protection to power projection and strike capability. Decay of force structure from Vietnam was replaced with the call for a 600-ship Navy capable of operating close to the Soviet Union in order to strike the Soviet homeland in time of war. Soviet Union had a large fleet of submarines

focused on ballistic missile attacks of U.S. and cruise missile attacks on Carrier and Amphibious forces. Earlier naval thinkers were worried about the large Soviet submarine threat to sealift ships needed to support the central NATO front in Germany. Impact of the Maritime strategy:

(1) High potential loss of ships and men operating close to Soviet homeland.

(2) Diversion of scarce resources from protecting SLOCs.

2. Threatening Soviet SSBN could destabilize the nuclear balance.

3. Real world events focused on the Middle East (Libya to Iran) fighting governments and terrorist groups opposed to the United States.

a. Marines ashore in Beirut in 1982-1984 to evacuate Palestine Liberation Organization, later immersed in Lebanese Civil War.

b. Invasion of Grenada in 1984 (Caribbean) removed communist influence from that island.

c. Tanker War, a subset of Iranian-Iraqi War, 1980-88.

(1) Iraq invaded Iran in 1980, attempting to take advantage of Iranian Revolution.

(2) Iran exported its revolution to the rest of the Middle East.

(3) Navy escorted reflagged Kuwaiti tankers, last convoys of the 20th century. In Korea and Vietnam, convoys were not required, as there was no threat to shipping.

C. Goldwater-Nichols Defense Reorganization Act of 1986 was an outgrowth of the poor showing of inter-service cooperation in the 70's and 80's. This law requires all officers to receive "Joint" education and to serve in "Joint" duty in order to be promoted to flag rank. This is to ensure that the four branches of the Armed Services can work together in time of war.

1. Chairman of the Joint Chiefs of Staff

2. Command and Control of forces placed under "Joint" combat commanders

3. Service Chiefs responsible for training, administration and outfitting their services

DEPARTMENT OF NAVAL SCIENCE
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NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 9 **HOURS: 1**

TITLE: The Navy at War in the 1990s

I. Learning Objectives

A. The student will know possible causes of the invasion of Kuwait and the U.S. reactions to it.

B. The student will comprehend the Navy and Marine Corps roles in Desert Shield and Desert Storm.

C. The student will understand the history and build-up to NATO involvement in Bosnia and Kosovo.

D. The student will understand the Navy's role in those wars, especially in terms of increasingly integrated joint concepts of operations.

E. The student will understand how the wars in Bosnia and Kosovo have tested and developed the practice of Network-Centric Warfare.

F. The student will understand relevant historical milestones in U.S. Naval history in the 1990s and their implication for the post-September 11th reality.

II. References and Texts

A. Instructor References (available in Appendix A of NROTC Sea Power Curriculum Guide or online at: https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf):

1. "On [the Gulf] War"

2. "The United States Navy and the Persian Gulf"

3. "The Fall & Rise of Naval Forward Presence"

4. "The Fall & Rise of Naval Forward Presence: Rebuttal"

5. "Lessons from the War in Kosovo"

B. Student Texts (available in Appendix A of NROTC Sea Power Curriculum Guide or online at: https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf):

1. "On [the Gulf] War"

2. "The United States Navy and the Persian Gulf"

3. "The Fall & Rise of Naval Forward Presence"

4. "The Fall & Rise of Naval Forward Presence: Rebuttal"

5. "Lessons from the War in Kosovo"

III. Instructional Aids

A. Chalkboard/Whiteboard

B. PowerPoint slides/projection system or instructor-prepared transparencies/overhead projector

C. Videos:

1. "Storm from the Sea"

2. "Seapower for the 90's"

3. "Desert Storm," U.S. Navy Heritage Mini-Series

4. "History of the U.S. Navy: The Navy from Vietnam to the Present (1964-1996)"

D. VCR/Monitor

IV. Suggested Methods and Procedures

A. Method options:

1. Lecture/Discussion

2. Incorporate slides with lecture

B. Procedural and student activity options: Reading assignment

V. Presentation

A. Desert Shield/Desert Storm

1. Iraq invaded Kuwait in August 1990. Iraq lost its principal political and military supporter in the Soviets, which allowed the U.S. to form a coalition without interference to free Kuwait. Largest overseas buildup of U.S. and allied forces in a generation.

2. 95% of all equipment went by sea on Ready Reserve Force and Prepositioning Ships, as well as American and foreign- flagged merchant ships.

3. Limited threat led to use of Naval Control of Shipping vice convoys.

4. Without civilian-manned sealift backed by Naval Reservists to control and coordinate the strategic sealift of Army, Air Force, and Marine Corps

equipment, the highly successful air and ground campaign would not have occurred.

5. All made possible by the Navy controlling the local seas.

6. Desert Storm showed the impact and effectiveness of precision weapons (Tomahawk cruise missile, smart weapons).

7. Merchant Marine kept the Navy at sea (UNREP of fuel and ammo), enabling it to perform its power projection mission.

B. Bosnia

1. Post-Soviet Union collapse; four of the six Yugoslavian republics want independence. Serbian President Milosevic uses force for the following decade to oppose these states. This situation will require the assistance of U.S. and U.N. forces for over a decade.

   a. 27 June 1991. Fighting starts in Slovenia, spreading to Croatia.

   b. 8 November 1991. Europe places economic blockade on Yugoslavia.

2. 1992: U.N. Security Council directive to use "all measures necessary" to end hunger and atrocities in Bosnia-Herzegovina.

   a. January. U.N. protection force sent.

   b. 22 May. U.N. recognized Croatia, Slovenia, and Bosnia as independent states. Fighting broke out soon after as Bosnian Serbs claimed existence of a Serb republic federated with Yugoslavia; ethnic cleansing began.

   c. 30 March. U.N. called for humanitarian aid, economic embargos, and ban on air traffic.

   d. 1 July. Washington called for relief flights that would be multinational and be supported until OPERATION DENY FLIGHT in April 1993.

   e. 22 September. Yugoslavia expelled from U.N. in response to Milosevic's atrocities.

3. NATO leaders reluctant to act, for fear that they would be dragged into a costly and unwinnable war.

4. 1993: NATO military operations largely limited to enforcing U.N. no-fly zone. Became largest on-going military operation over Europe since WWII.

a. 12 April. OPERATION DENY FLIGHT. NFZ over Bosnia.

b. 15 June. OPERATION SHARP GUARD. Adriatic blockade.

5. For the first time, it was clear that virtually all targets were moveable.

6. Joint Combined Air Operations Center (CAOC) in Aviano, Italy.

7. U.S. sensor assets

a. UAV (Predators and Gnat-750s) spotted key targets.

b. P-3C Orion with long endurance and large crews provided extremely useful intelligence.

c. E-2C Hawkeye, AWACS (E-3) used to control friendly aircraft and detect enemy attempts to interfere with allied air operations (essentially neutralized Serbian air force).

d. JSTARS (E-8A) detected moving ground traffic over-the-horizon. First used in Gulf War.

e. EC-130E (ABCCC) linked strike aircraft to CAOC; overcame line-of-sight restrictions in mountainous terrain. Bosnia was first major use of these aircraft.

8. Bosnian mission seemed to be classic Close Air Support (CAS). However, point of NATO air power was to coerce Serbs without engaging a ground force. How could targets be effectively identified in future wars with similar missions (i.e., "center of gravity" focus) without FACs/ground element support? Anticipated RTIC.

a. RTIC -- "Real Time in the Cockpit"

(1) CAOC received targeting intelligence (e.g., via UAV)

(2) Target was fused with stored area imagery and sent to strike aircraft via data link.

(3) Cockpit display showed imagery, as well as CAS nine-line targeting brief.

b. An important step toward Network-Centric reality, RTIC was a reality by 1996. F-16s

assigned to CAS were outfitted with data modems for RTIC imagery.

9. Standoff between NATO aircraft and Bosnian Serb air defenses continued through most of 1994. U.N. mounted a ground "protection force" (UNPROFOR), intended to protect (really, deter) "ethnic cleansing" by Serbian Army. Generally, Serbs called UNPROFOR's bluff only to receive retaliation via air attack.

10. Evolution of Network-Centric strike concepts.

    a. August-September. NATO strikes were similar in concept to Gulf War: pre-planned against fixed targets (vice mobile ones).

    b. However, strikes involved valuable new precision weapon: the GPS-guided Tomahawk missile, meaning that a TLAM launched from a sea-based platform did not have to orient itself over mapped terrain. A precursor to the GPS-guided munitions of Kosovo, Afghanistan, and Iraq (i.e., Iraqi Freedom).

11. 1995

    a. 30 August - 21 September. OPERATION DELIBERATE FORCE. NATO bombing offensive.

    b. 14 December. Dayton Accords. Ended war in Bosnia. Milosevic still in power.

    c. Politically, contributed to Muslim fundamentalism. Reported in Muslim world as a "holocaust."

C. Kosovo

1. 24 March - 10 June 1999. Similar war breaks in Kosovo, former Yugoslav republic at least under nominal Serbian control.

2. OPERATION DENY FORCE response to "ethnic cleansing" started shortly after the Dayton Accords (Milosevic up to old tricks).

3. Initially planned as a 48-hour campaign, it would last 78 days.

4. This time, no UNPROFOR (i.e., no organic ground element).

5. As in Bosnia, Serbs used mobility to protect air defense system.

    a. No ground observers to direct targeting.

b. U.S./NATO policy barring all troops, including SOF, might be blamed for tactical failure of air attacks -- a mistake NOT repeated in Afghanistan. (Note that the use of sensors in Kosovo was not where it would be in the future, i.e., Afghanistan.)

6. The political-strategic strikes seemed not to have been terribly effective.

a. Center of gravity attacks?

b. Was there a way to force the enemy to move in a way to produce lucrative targets?

7. After 78 days of bombing, Serbian Army collapsed and evacuated; refugees returned to their province. Why?

8. Kosovo Liberation Army (KLA) began operating against Serbian units toward the end of the war. To counter KLA, Serbian units had to mass, creating targets. KLA did little actual fighting.

9. One way of interpreting this is that precision bombing became effective only when linked to a force on the ground -- and that force did not have to be a NATO army (like the effete UNPROFOR).

a. Here the KLA functions as a coalition force.

b. Neither NATO nor KLA had much of a chance of winning without the other.

10. This suggested a model for future wars (i.e., Afghanistan).

a. Always seek a local coalition partner sufficiently interested in the outcome to fight as needed, in order to get "boots on the ground."

b. Caveat: Coalition partners are not proxies; they are animated by their own interests.

D. Other Naval Events in the 1990s

1. In the News

a. September 1991. Tailhook -- The Navy suffers bad public relations and a great loss of officers' careers through NJP, conduct unbecoming.

b. April 1993. Secretary of Defense announces that women will be able to fly combat aircraft and serve on combat vessels.

c. July 1993. "Don't Ask, Don't Tell" -- Clinton policy for homosexuals in the military.

d. February 1994. LT Shannon Workman becomes first female carrier-qualified fighter pilot.

e. February 1998. A Marine Corps EA-6B, based in Aviano, Italy, flies below low-level training-route altitude and severs gondola cables, killing civilians.

f. October 1994. LT Kara Hultgreen, first woman carrier qualified in the F-14 Tomcat, is killed during landing operations; RIO, LT "Shaggy" Klemish, survives ejection.

g. March 1995. LCDR Wendy Lawrence, daughter of Admiral Lawrence (Vietnam POW), becomes first female naval aviator in space on board STS 60, The Endeavor.

h. May 1996. Death of Admiral Michael Boorda. Chief of Naval Operations shoots himself in response to journalistic investigations of his entitlement to wear combat "V" for service in waters off Vietnam.

i. October 2000. Attack on the USS Cole. DDG 67 is struck in port in Yemen by small boat carrying hundreds of pounds of explosive. Osama Bin Laden suspected. Incident will gain later relevance in the wake of September 11th attacks.

j. February 2001. Greenville incident. SSN 772 Greenville makes "emergency blow" and strikes Japanese trawler, killing 9 of 35.

k. April 2001. EP-3 Incident. Chinese J-8 accidentally clipped one of EP-3 propellers forcing the EP-3 to emergency land on communist soil. Chinese pilot ejects, but not recovered. Ensuing debate over "fault" of collision.

2. Policy/New Technology -- Use the following as ancillary to the evolution from Mahanian Sea Control policies to modern Seapower 21 concepts. The government consolidates spending and naval strategy into the CVBG and the Marine Corps as a tool of Power Projection.

a. September 1992. ". . . From the Sea." The Navy adopts new mission as consequence to the end of the Cold War. Views "Control of the Seas" as a battle already won in the new "Single Super Power" world. Shifts focus to

projection of military forces in littoral areas during regional conflict.

b. September 1993. "Bottom Up Review." 346-ship navy with 11 carrier battle groups. Goal: Ability to fight two major regional conflicts and one low intensity conflict at the same time. Discuss the Naval commitments at this time (i.e., Bosnia, Iraq, perhaps Somalia). History is guiding policy.

c. May 1997. As result of first "Quadrennial Defense Review," force levels to be able to deal with two simultaneous regional conflicts call for 12 carriers groups and 12 amphibious ready groups.

d. June 1997. Navy signs preliminary agreement for construction of the DD-21 Zumwalt class.

e. May 1999. Osprey, MV-22, first of four production models approved.

f. September 1999. New Attack Sub (NSSN) "Virginia" class to be built. First delivered in 2004. 30 to be built to replace Los Angeles-class submarine.

g. April 2000. MV-22 crashes in Arizona; 19 lost.

h. December 2000. MV-22 crashes in Jacksonville, killing all four crewmen.

i. December 2000. JSF X-35C, carrier version, makes first flight. Contracted by the Navy to complement the F/A-18E/F in 2010. STOVL (short take-off/vertical landing) variant intended for Marine Corps.

j. March 2000. Mrs. Ronald Reagan christens the USS Ronald Reagan, CVN 76 -- the first carrier named after a living President.

k. June 2001. Secretary of Defense Donald Rumsfeld reports that DD 21 land-attack destroyer would not be a substantial improvement over existing platforms.

E. Significance of the 1990s for the Navy of the Future

1. The students should comprehend the transitional nature of the naval strategy and policy in the 1990s when judged against post "9-11" events, e.g., the War on Terrorism.

2. The students should question whether many of the guiding assumptions of the 1990s were made obsolete by 9-11 and the War on Terrorism.

3. The students should assess what aspects of the naval policy and strategy of the 1990s remain valid for the early 2000s.

4. Given the events of the last decade (ESGs, sea-basing, etc.), was the planning of the 1990s short-sighted? Was "From the Sea" relevant in 2001 when we were fighting a war hundreds of miles inland in Afghanistan? Is the CVBG a relic of the cold war in the age of Network-Centric dispersion? This history is as yet unwritten; YOU need to teach it!

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 10 **HOURS: 1**

TITLE: The Navy at War in Afghanistan: Operation Enduring Freedom, 2000-2003

I. Learning Objectives

A. The student will understand the events leading up to the 2001 invasion of Afghanistan, including President George W. Bush's foreign policy doctrine before and after 11 September 2001.

B. The student will understand the conduct of war in Afghanistan, to include the coalition and command structures, as well as the relevance of naval components.

C. The student will critically assess an interpretation of the Afghan War as the best exercise to date of a modern war according to Seapower 21 doctrine, especially in the application of Network-Centric concepts.

II. References and Texts

A. Instructor References:

1. Terrorism, Afghanistan, and America's New Way of War, Chapters 1, 9, and 10.

2. American Foreign Relations, Chapter 12

B. Student Texts: None

III. Instructional Aids: PowerPoint slides/projection system

IV. Suggested Methods and Procedures

A. Method options

1. Lecture/Discussion

2. Incorporate slides with lecture

B. Procedural and student activity options: Reading assignment

V. Presentation

A. Prologue: Foreign Policy of President George W. Bush, January 2001 - 11 September 2001.

1. During the 2000 presidential campaign, George W. Bush announced he would solve defense problem not by adding much to the budget but by modernizing the

military in line with the "Revolution in Military Affairs" (RMA).

2. Plan included a missile defense system.

   a. Hostile states, including Iran and North Korea, had very active long-range missile programs.

   b. China had done some minor saber rattling challenging U.S. conviction to protect Taiwan against the threat of nuclear war.

   c. The suggestion was that perhaps the U.S. would not be willing to use nuclear weapons if challenged.

3. Bush's plan was to make ends meet by transforming the military through modernization.

4. Donald Rumsfeld was made Secretary of Defense with a mandate for "transformation." Admiral Arthur Cebrowski (champion of network-centrism) became head of the DOD's new transformation office.

5. 11 September 2001: Four airliners are hijacked by members of the Al Quaeda terror organization. Two are crashed into the World Trade Center "twin towers" in Manhattan; one is crashed into the Pentagon; the fourth is crashed into the ground, placed into a fatal dive by hijackers after passengers try to wrest away control. Change, if it were to happen, would now be in the form of crisis vice long-term planning.

B. Coalition Warfare -- U.S. invokes Article 5 of NATO treaty (mutual defense clause) and governments agreed. Overall NATO assistance included the provision of AWACS aircraft, which could replace U.S. aircraft operating over United States; however, most NATO governments were slow to offer combat troops. Their contingents proved most important for peacekeeping once the new government had been installed in Kabul.

C. A Maritime War

1. Question of how to bring firepower to bear with no bases immediately available. Answer is sea-based carrier warfare and Network-Centric concepts; i.e., limited, netted, precision force. From the sea: air attacks, expeditionary marines, cruiser and submarine-launched TLAMs, etc.

2. New tanking architecture needed to be developed to support carrier-based aircraft strike sorties. British supplied 20% of tanking. Since tankers are non-combat, local allies (Oman, Saudi, etc.) allowed them to operate from within their borders. These were vital sorties.

3. Through November, carriers were the only source of tactical strikes. Late in November, USAF began using at least one former Soviet base in Tajikistan.

4. War involved three aircraft carriers initially: USS Enterprise, USS Carl Vinson, and USS Theodore Roosevelt. In November, USS John C. Stennis arrived.

5. Two amphibious ready groups built around 15th and 26th Marine Expeditionary Units (MEUs) with amphibs USS Bataan (LHD 5) and USS Pelelieu (LHA 5). These would be the principal ground force in southern Afghanistan.

6. USS Kitty Hawk deployed without full airwing, embarking Army Special Operations helicopters (to transport the 75th Ranger Regiment) to operate over southern Afghanistan. (Army helicopters out of Uzbekistan covered North.)

7. Overall, naval aircraft flew about three-quarters of all sorties and dropped about a third of the bombs. USAF flew about a quarter (including bombers out of Diego Garcia) and dropped three-quarters of bombs.

8. Coalition Forces.

   a. British forces included carrier HMS Illustrious, amphibious carrier HMS Ocean, TLAM submarines HMS Trafalgar and HMS Triumph, plus others. British also contributed aircraft, especially tankers, AWACS, and surveillance platforms.

   b. Australia, Bahrain, Canada, France, Germany, Greece, Italy, Netherlands, and Spain all contributed ships to a coalition force intended to intercept Taliban and Al Quaeda fleeing by sea.

   c. In December 2001, French battle group around nuclear aircraft carrier Charles de Gaulle participated in "Operation Anaconda."

   d. German frigates surveyed Somali coast. Also contributed patrol boats to Indian Ocean interception operation.

   e. First time since 1945, Japan became involved in a distant naval operation. A group built around the helicopter-carrying destroyer Kurama, and the missile destroyers Sawagiri and Krisame.

D. Land Basing -- Pakistan allowed some covert use of airfields, allowing Special Forces assault on 12 October

2001 and Marines' occupation of Forward Operating Base (FOB) Rhino.

E. Command Arrangements

1. CENTCOM had a preexisting command structure which was moved into place; command relationships were clear from the outset. Defense Department saw this as the first of a possible series of quick, short wars. One of its solutions was to demand the build up of permanent Joint Task Forces, assignable to operations as needed. Probably the success of the preexisting CENTCOM command structure helped inspire this idea.

2. By 2001, satellite communications systems were so good that it was argued command could effectively be exercised from a great distance. U.S. commander, General Tommy Franks, stayed at CENTCOM headquarters at MacDill Air Force Base in Tampa, Florida. Later, it was argued that he missed important nuances of the Afghan situation (e.g., time zone problems, etc.).

3. CENTCOM, due to inhospitality of local states, does not normally have fighting units dedicated to it. Units are assigned for a particular operation.

   a. U.S. Navy maintains Fifth Fleet staff in Bahrain, but commands only limited forces at any one time.

   b. Since Gulf War, USAF had built Combined Air Operations Center (CAOC) at Prince Sultan Air Force Base in Saudi Arabia. Initially, Saudis refused use of CAOC, but relented in late September. This was an absolutely vital arrangement for effective air power employment (i.e., netting limited on-station resources). Will Saudi Arabia or other country (Iraq?) allow CAOC basing in the future? This presents an argument in support of Seapower 21 "Sea Basing" concepts.

F. Precision Air Attack: The New Kind of War

1. Effects-based targeting: Point is not whether an expensive weapon destroys a valuable target, but that destroying certain targets will have greater overall effect.

2. New weapons: GPS-guided munitions. Joint defense attack munitions (JDAM) is the hero of the day. Great advantages over laser-guided bombs. FACs need only coordinates; do not need to talk pilots onto targets. This also means that big bombers (e.g., B-52s), formally restricted to "dumb" bombs, could now drop a bay full of precision-guided munitions. Targets could

be relayed by any GPS-capable sensor. This is Network-Centric Warfare!

3. Percentage of guided bombs dropped in Afghanistan much higher than any previous war. By 7 December, 56% of all bombs dropped were "smart," compared to 35% in Kosovo.

4. Air Tasking Order was improved for real time targeting. Rather than delimit sortie targeting, the ATO now deployed aircraft for on station times, whence they could be directed for time-sensitive-targeting (i.e., netted targeting).

5. Netted structure: Real-time intelligence streamed into CAOC from a wide variety of sensors -- EP-3, RC-135, JSTARS, P-3C, S-3, UAVs, Special Forces, etc. All contributed to information "backplane," allowing for increased speed of command.

G. Initial Strikes (Center of Gravity Attacks)

1. Initial strikes aimed at rolling back Afghani Integrated Air Defense System (IADS).

   a. 7 October 2001: Attack on Taliban begins with TLAM launches followed by carrier strike aircraft, USAF long-range bombers from Diego Garcia, B-2s from United States, etc.

   b. Feared shoulder-launched Stinger missile threat, which had been effective in Soviet war, never materialized; presumably they had been rendered inoperable by outdated batteries and rocket motors.

2. Second initial objective to destroy land communications. Taliban had high reliance on radio communication, which was exploited by coalition forces for targeting and jamming (responsibility of Navy EA-6B Prowler and Air Force EC-130 Compass Call). This attack on communications was part of the new warfare, emphasizing the importance of the OODA Loop (Boyd cycle) of response to battlefield attacks.

3. Taliban defense: Reporting that U.S. attacks were killing civilians and moving targets into civilian-populated areas in an attempt to enrage Muslim furor.

4. Air power supplied in two complementary ways: In direct support of Northern Alliance and to independently target Taliban and cripple their movement.

5. Initial U.S. goal was Osama bin Laden; presumably, attacks would have stopped and Taliban left in power if bin Laden were surrendered.

a. This basic concept was flawed because, by 2001, bin Laden and Al Quaeda were integral to the Taliban state.

b. Strategy ultimately shifted to Northern Alliance supported defeat of Taliban.

H. War in the North

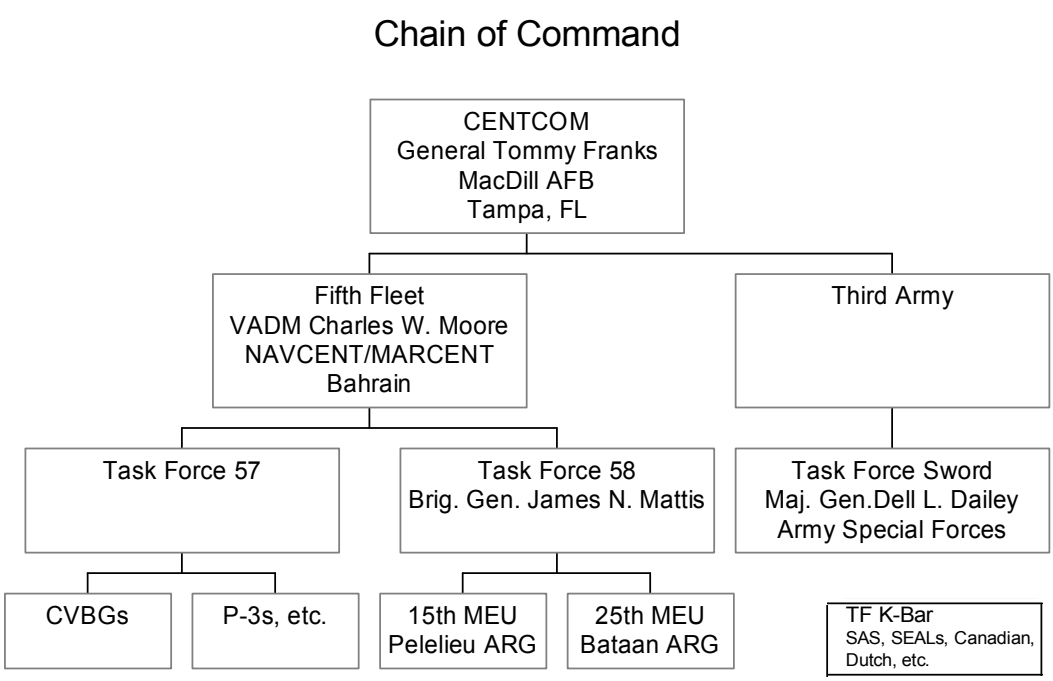
1. Strategy in the North revolved around Northern Alliance and Special Forces representatives assigned to them.

2. On 13 November, Northern Alliance troops entered Kabul to little opposition. Shortly thereafter, they took Konduz, the last stronghold in the north.

I. War in the South

1. The south was Taliban country. There was not as strong a local element (Southern Alliance). Responsibility for this theater fell mostly to Fifth Fleet, based in Bahrain.

FIFTH FLEET COMMAND STRUCTURE:



2. Task Force 58 utilized two Marine Expeditionary Units (MEUs) minus the heavy material, allowing for personnel insertion far inland with organic helicopters. Task Force 57 provided Air Support.

3. The decision to put Brigadier General James N. Mattis in overall command of Task Force 58 was a revolutionary concept that foreshadowed the idea of the expeditionary strike group (ESG), relevant to Network-Centric concepts.

4. Marine operation would not merely be a show of force; its raids were to defeat Taliban and Al Quaeda forces quickly and decisively.

    a. Admiral Moore: "Marines don't give themselves enough credit. A squad of Marines running through Kandahar would turn the tide."

    b. Thus, the establishment of Camp Rhino.

5. 19 October: Southern campaign commences with special forces attack on Taliban compound outside Khandahar; attack was somewhat confused. Lessons:

    a. The Afghan fighters had limits.

    b. U.S. troops proved themselves, finding that body armor saved them.

    c. Throughout war, U.S. casualties would be extremely light.

6. FOB Rhino

    a. TF 58 chose airstrip SOF had already raided as site for Rhino. Marines seized Rhino on 25 November.

    b. 400 nm from the amphibious ready group; 95 nm from Khandahar. "The tyranny of distance" limits rate at which Rhino can be built up.

    c. Marine advantage: Familiar with operating in small formations. Instead of being crippled by limited numbers, they could still create viable units with worthwhile firepower. Also had organic transport/refueling with CH-53s and KC-130s. USAF C-17s used later to support Rhino.

    d. Taliban could not attack air supply line because initial attacks had eliminated anti-air capability.

    e. Rhino personnel capped by CENTCOM, presumably to not anger native Afghanis. Raids were, therefore, limited, and all aircraft operated at night.

7. 6 December: Kandahar taken by combination of Marines from Rhino and Southern Alliance forces. Locals

aren't as receptive as in Kabul, leading to security questions. Kandahar Airport taken by 14 December.

8. January 2002: TF 58 relieved in place by Army's 101st Airborne Division. The fighting did not stop. Handover was not complete until the end of the month; TF 58 staff did not leave until 5 February. TF 58 finally released on 20 February.

J. Conclusion

1. Once coalition appeared to be winning, Afghani tribal leaders switched sides, leaving Taliban to rely on the Arab fighters. This contributed to rapid fall of Taliban. Cash became an important factor in war: Much paid out to tribal leaders to switch sides (leaders only interested when the odds looked favorable).

2. With Kabul fallen, U.S. government moved quickly to promote legitimate Afghan government, but without giving the appearance of American occupation. U.S., therefore, moved to bring in a United Nations stabilization force and call for international cooperation in supporting the new government.

3. Although major cities had fallen, none of the major Taliban or Al Quaeda leaders had been captured. Two possibilities:

   a. They were trying to escape through Pakistan and to Africa by sea. To counteract this possibility, U.S. and allied warships set up a shipping interception zone in Arabian Sea. Only a few were caught.

   b. Many of the Arabs were hiding in cave systems in eastern Afghanistan, near Pakistani border.

4. Tora Bora

   a. Initially reported that a large Taliban concentration, including bin Laden, was hiding in Tora Bora mountains complex.

   b. Assault conducted by Afghan troops stiffened by U.S. firepower. Apart from SOF liaison, U.S. troops not directly involved.

   c. Afghans took cave complex, but let many key figures escape. (Coalition force goals versus U.S. goals -- for them the war was already won.)

   d. Tora Bora was expensive for enemy: Bodies of at least 300 found with more likely in caves. 150 men caught trying to escape over Pakistani border. Probably lost half of their force.

e. Al Quaeda learned that U.S. (using RC-135) could intercept their radio and cell phone communications. In Anaconda, they tried using couriers (defeating their OODA loop).

5. Anaconda

a. Conducted by U.S. forces with British, Canadian, and Australian SOF.

b. Largest ground battle of the war.

c. Intended to destroy what DOD claimed was last intact pocket of Al Quaeda troops; thus, precluded a spring offensive.

d. A mostly Army Operation. Navy support existed mostly in air sorties dictated by ATO.

e. An overall disappointment. Lives saved mostly due to effective body armor (only eight coalition troops killed). Problems arose from divergence in operating practice of participating Army and Air Force Units. The challenges of joint effort still prevail.

6. Overall, cave-busting operations fruitful. Masses of documents, computers, etc., provided valuable intelligence on Al Quaeda operations.

7. Main-force war ended with U.S. and coalition partners in nominal control of Afghanistan but with many supporters of the Taliban still in place. There was general agreement that the war was not over. Conflict still exists at the time of this writing.

K. A Modern War

1. The Afghan War was both a test and a demonstration of a Network-Centric war, an outcome of the Revolution in Military Affairs (RMA).

2. Initial air campaign was a test of the pure form of Network-Centric theory: Attacking centers of gravity to cause collapse. It failed because Taliban did not collapse instantly. However, with a substantial ground element (Northern Alliance, MEUs), it proved brilliantly successful. Essential feature: SOF liaisons with Northern Alliance commanders. This is the first war where this has been obviously essential to victory.

3. Air war closer to Network-Centric model than past ones (e.g., Kosovo), but did not quite get there.

a. Not enough sensors to cover all of Afghanistan

b. Split objectives between hunt for bin Laden and defeat of Taliban exacerbated problem. P-3s became friends of Marines, while UAVs were piped into the CAOC (or higher) and used principally to hunt for OBL.

c. Although much of the infrastructure for Network-Centric Warfare had been put in place, the shift from platform to sensor was only just beginning.

4. New approach to presence demanded larger numbers of independent naval formations. The new strategy implied that carrier and amphibious battle groups be independently combat capable. Reflected in the decision to form Expeditionary Strike Groups (ESGs) around Amphibious Ready Groups (ARGs).

5. The Afghan War demonstrated the value of naval forces, which could operate free of bases, remote sensing assets (satellites, etc.), and special forces operations. Sea-basing offers independence; sensing facilitates the information “backplane” necessary for Network-Centric Warfare. All of this is integral to Seapower 21.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 11 **HOURS: 2**

TITLE: National Defense Organization

I. Learning Objectives

A. The student will know the missions of the U.S. Army, U.S. Air Force, and U.S. Coast Guard.

B. The student will explain how and why the Department of Defense was established.

C. The student will understand the organizational relationships that govern the U.S. Armed Forces at the national and theater levels.

D. The student will be familiar with the basic functions of the operational and administrative chains of command and distinguish between them.

E. The student will relate how additional maritime forces (the U.S. Coast Guard and the U.S. Merchant Marine) are brought under military control in wartime.

F. The student will know the basic concepts and philosophies outlined in Joint Pub 1, being able to describe the nature of American Military Power and identify the values of Joint Warfare.

II. References and Texts

A. Instructor References

1. "Introduction to Naval Science," NROTC Curriculum Guide, P1550/5, Lesson 2, "Mission and Organization of the USN, USNR & USMC"

2. NTTP 3-07.12, "Naval Cooperation and Guidance for Shipping"

3. Joint Publication 1 (Available online at http://www.dtic.mil/doctrine/jel/new pubs/jp1.pdf.)

4. Web Pages:

www.defenselink.mil/pubs/dod101
http://www.dtic.mil/doctrine/jel/new pubs/jp1.pdf
http://www.af.mil/lib/misc/af101.htm
http://www.army.mil/armyvision/ArmyVision.htm
www.dtic.mil
www.marad.dot.gov
www.uscg.mil

C. Student References

www.defenselink.mil/pubs/dod101
http://www.dtic.mil/doctrine/jel/new_pubs/jp1.pdf
http://www.af.mil/lib/misc/af101.htm
http://www.army.mil/armyvision/ArmyVision.htm
www.marad.dot.gov
www.uscg.mil

III. Instructional Aids

A. Video: "Joint Warfare of the U.S. Armed Forces"

B. Whiteboard/Chalkboard

C. Handouts

D. Computer/projection system and PowerPoint slides of web pages and other material or overhead projector and locally-prepared transparencies

E. VCR/Monitor

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion. Show and discuss video, which covers Joint Pub 1 in detail. Address remaining objectives.

B. Procedural and student activity options: Have students review the web pages before class. Each provides a slide show and details on that service.

V. Presentation

A. National Command Authority

1. The President is Commander-in-Chief of the U.S. Armed Forces. He has ultimate authority and responsibility for military decision-making. His principle assistant is the Secretary of Defense. Together, they form the National Command Authority (NCA), controlling the movement and actions of all military forces.

2. The President is advised on national security matters by the National Security Council (NSC), consisting of the President, Vice-President, Secretary of State, Secretary of Defense, and National Security Advisor. The council is advised on intelligence matters by the Director of the Central Intelligence Agency (CIA) and on military matters by the Chairman of the Joint Chiefs of Staff (JCS).

B. Department of Defense (DOD)

1. The Secretary of Defense (SECDEF) is responsible to the President for all military matters and is a member of both the Cabinet and the NSC.

2. DOD was established by the 1949 amendment to the National Security Act of 1947 to direct the three military departments (Army, Navy, and Air Force) and supervise the operational commands of the Armed Forces.

3. Missions

   a. Support and defend the Constitution of the U.S. against all enemies.

   b. Protect the U.S., its possessions, and areas vital to its interests.

   c. Advance the policies and interests of the U.S.

   d. Safeguard the internal security of the U.S.

4. The Armed Forces' operational and administrative chains of command report to SECDEF.

   a. Operational chain of command -- Responsible for directing and operating military forces in the performance of their missions.

   b. Administrative chain of command -- Responsible for ensuring that operating forces are properly prepared for combat and for managing the support structure (e.g., shipyards, naval bases, schools, supply depots, etc.).

C. Joint Chiefs of Staff (JCS)

1. The JCS act as advisers to the President and the Secretary of Defense. The JCS are responsible for providing joint strategic and logistic plans, reviewing major material and personnel requirements of the Armed Forces, formulating policies for joint training and military education, and other duties as prescribed by the President or SECDEF. (Only in operational chain of command when directed by the National Command Authority.)

2. The Chairman is selected from any service and becomes the ranking military officer of the U.S. Armed Forces. The Chairman serves as principle military adviser to the President, NSC and SECDEF. He/she may transmit communications to the commanders of the combatant commands from the President and the SECDEF, but does not exercise military command over any combatant forces (Unified Commands).

3. The Vice-Chairman is the second-ranking member of the JCS and replaces the Chairman in his or her absence or disability. He/she is also selected from any service and is a full voting member.

4. The senior military officer of each service represents his service on the JCS: Chief of Staff of the Army, Chief of Staff of the Air Force, Chief of Naval Operations, and Commandant of the Marine Corps.

D. Unified Commands

1. Unified commands, also known as combatant commands, have a broad or continuing mission and are normally organized on a geographical basis (theater) or within a major mission area.

2. Unified commands are composed of forces from two or more services; all forces not assigned to a combatant command remain in their departments.

3. Each unified command is headed by a Flag or General Officer, who is directly responsible to the Secretary of Defense. This process maintains civilian control of the military.

4. Current examples of unified commands:

a. Responsible for a geographic region or theatre of operations, e.g., U.S. European Command (USEUCOM), U.S. Central Command (USCENTCOM), U.S. Pacific Command (USPACOM), U.S. Joint Forces Command (USJFCOM), U.S. Southern Command (USSOUTHCOM) and U.S. Northern Command (USNORCOM).

b. Responsible for world-wide functional responsibilities, e.g., U.S. Transportation Command (USTRANSCOM), U.S. Strategic Command (USSTRATCOM), and U.S. Special Operations Command (USSOCCOM).

5. Each unified command has component commanders from each service who are responsible to the unified commander for the functions performed by their service.

E. The military departments are directly responsible to SECDEF for the training, readiness and administration of their respective services (i.e., they head each service's administrative chain of command). Each service secretariat is headed by a civilian secretary, to whom the senior military officer in that service is responsible for the training, readiness and administration of his service. Operational command lies within the Unified Command structure.

1. Department of the Army

    a. Secretary of the Army

    b. Chief of Staff of the Army

    c. Mission of the United States Army

        (1) Strategic instrument of national policy

        (2) People

        (3) Strategic dominance across the entire spectrum of operations

            (a) Responsive

            (b) Deployable

            (c) Agile

            (d) Versatile

            (e) Lethal

            (f) Survivable

            (g) Sustainable

        (4) Aspire to be the most esteemed institution in the Nation

            (a) Most respected Army in the world

            (b) Most feared ground force

2. Department of the Air Force

    a. Secretary of the Air Force

    b. Chief of Staff of the Air Force

    c. Mission of the United States Air Force

        (1) Global engagement through a rapid, flexible, and precise response

        (2) Air Force Core Competencies are:

            (a) Aerospace Superiority

            (b) Global Attack

            (c) Rapid Global Mobility

            (d) Precision Engagement

(e) Information Superiority

(f) Agile Combat Support

3. Department of the Navy

a. Secretary of the Navy (SECNAV)

b. Chief of Naval Operations (CNO)

c. Commandant of the Marine Corps (CMC)

NOTE: The mission, functions, and strategy of the U.S. Navy are discussed in detail in Lesson Guide 12.

F. The Department of Transportation (DOT) and the Department of Homeland Security both control our nation's other maritime assets that can be used for military purposes in wartime:

1. The U. S. Coast Guard (USCG)

a. Provides maritime law enforcement and safety, and homeland security of harbors and ports in peacetime.

b. In time of war or national emergency, the President has the authority to place the Coast Guard directly under the Chief of Naval Operations. Operational forces of the USCG, especially aircraft, high endurance cutters, and port security and control forces, would be placed under operational Navy commanders to provide forces for convoy escort, Undersea Warfare (USW), maritime patrol, and port security/control in home waters or abroad.

c. Headed by the Commandant of the Coast Guard.

2. The Maritime Administration (MARAD)

a. Headed by the Maritime Administrator, this civilian organization regulates the U.S. shipping industry and maintains shipping reserves for the government in peacetime.

b. In time of war or national emergency, the MARAD organization would be modified to staff the National Shipping Authority (NSA), providing positive control over our nation's shipping assets to ensure they are used as efficiently as possible to support vital military and economic priorities. This is known as Civil Direction of Shipping (CDS).

c. In wartime, ships needed by DOD to provide sealift would be tendered from government-maintained shipping reserves or contracted from

private companies to the MSC. Other shipping assets would remain under private operation but be subject to government direction.

d. All U.S.-controlled merchant ships not under direct jurisdiction of the DOD are still subject to Naval Control of Shipping (NCS). NCS allows the Navy to provide the most effective possible protection for merchant ships.

G. Joint Publication 1 and Joint Warfighting

1. The nature of modern warfare demands that the Armed Forces of the United States fight as a team. In a national emergency, this will include the Coast Guard, NOAA, USPHS, MARAD and the Merchant Marine.

2. American Military Power

a. Deterrence is our first line of national security. If deterrence fails, our objective is winning the nation's wars.

b. In military operations other than war, our purpose is to promote national security and protect our national interest.

3. Values in Joint Warfare

a. Integrity: Count on each other to say what we mean and do what we say.

b. Competence: Cement the mutual cohesion between leader and follower.

c. Physical courage

d. Moral courage: This involves the willingness to stand up for what we believe is right, even if that stand is unpopular or contrary to conventional wisdom.

e. Teamwork: The Armed Forces are a team.

f. Trust and confidence

g. Delegation

h. Cooperation

4. Fundamentals of Joint Warfare

a. Unity of effort

b. Concentration of military power

c. Seizing and maintaining the initiative

d. Agility

e. Operations extended to the fullest breadth and depth

f. Maintaining freedom of action

g. Sustaining operations

h. Clarity of expression

i. Knowledge of self

j. Knowledge of the enemy

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 12 **HOURS: 2**

TITLE: The Mission, Functions, and Strategy of the U.S. Navy

I. Learning Objectives

A. The student will state the mission of the U.S. Navy as defined by Title X of the U.S. Code.

B. The student will specify the five functions of the U.S. Navy and the basic tactics used to carry them out.

C. The student will understand the role of the U.S. Merchant Marine as a naval/military auxiliary augmenting the Navy's capability to perform its wartime functions.

D. The student will explain the relationship between national interests, national security policy, national military strategy, and national maritime strategy.

E. The student will identify the basic policies discussed in "From the Sea" and understand how this new national maritime strategy relates to our current national military strategy, national security policy, and national interests.

II. References and Texts

A. Instructor References

1. Naval Science for the Merchant Marine

2. "... From the Sea" (Available online at: http://www.chinfo.navy.mil/navpalib/policy/fromsea/fromsea.txt.)

3. "Forward ... From the Sea" (Available online at: www.chinfo.navy.mil/navpalib/policy/fromsea/ffseanoc.html.)

4. NAVEDTRA 12966, "Naval Orientation," Chapter 1

5. "A National Security Strategy for a New Century" (Available online at: http://www.fas.org/man/docs/strategy97.htm.)

6. Compilation of Maritime Laws

7. "Sea Power 21," by ADM Vern Clark (Available online at: www.chinfo.navy.mil/navpalib/cno/proceedings.html.)

8. "Sea Power 21: Projecting Decisive Joint Capabilities," by ADM Vern Clark (Available in

Appendix A of NROTC Sea Power Curriculum Guide or online at: http://www.usni.org/Proceedings/Articles02/PROcno10.htm or https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

B. Student Texts and References

1. Naval Science for the Merchant Marine

2. "Sea Power 21," by ADM Vern Clark (Available online at: www.chinfo.navy.mil/navpalib/cno/proceedings.html.)

3. "Sea Power 21: Projecting Decisive Joint Capabilities," by ADM Vern Clark (Available in Appendix A of NROTC Sea Power Curriculum Guide or online at: http://www.usni.org/Proceedings/Articles02/PROcno10.htm or https://www.cnet.navy.mil/cnet/nrotc/cig/seapowerappendix12-02.pdf.)

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

B. Procedural and student activity options: Have each (or several) students make a presentation on current events which have implications for our nation's potential military or foreign policy challenges and maritime strategies.

V. Presentation

A. Mission and functions of the U.S. Navy

1. Mission of the U.S. Navy according to Title X of the U.S. Code: "Be prepared to conduct prompt and sustained combat operations at sea in support of the national interest."

2. Functions of the Navy: Sealift has been added here to the original four functions because "... From the Sea" treats sealift as a distinct and important function of the Navy. The instructor should emphasize how the merchant marine supports the Navy in each of these

functions/missions. Especially emphasize that sealift is a primary merchant marine function supporting the Navy.

a. Forward Presence

(1) Definition

(2) Purpose

(3) Tactics (Compare and contrast preventive deployment and reactive deployments.)

(4) Role of the Merchant Marine: Crewing of MSC ships for underway replenishment of fuel, food, and ammunition. Civilian-manned government and contract ships to support MSC; delivery of equipment to forward shore bases and in support of ships at sea.

b. Strategic deterrence

(1) Definition

(2) Purpose

(3) Tactics: Controlled response capability; assured second strike (as part of the nuclear triad).

(4) Role of the Merchant Marine: Logistic support to submarine tenders and forward bases.

c. Sea Control

(1) Definition

(2) Purpose

(3) Tactics: Sortie control, choke point control, open area operations, and local engagement.

(4) Role of the Merchant Marine: Crewing of MSC ships for underway replenishment of fuel, food, and ammunition. Civilian-manned government and contract ships to support MSC; delivery of equipment to forward shore bases and in support of ships at sea.

d. Power Projection

(1) Definition

(2) Purpose

(3) Tactics: Naval bombardment, amphibious assault, tactical air projection, cruise missile attack.

(4) Role of the Merchant Marine: Crewing of MSC ships for underway replenshipment of fuel, food, and ammunition. Civilian-manned government and contract ships to support MSC, delivery of equipment to forward shore bases and in support of ships at sea.

e. Sealift (managed by the Navy but carried out by merchant-manned vessels)

(1) Definition

(2) Purpose

(3) Tactics: Prepositioned ships, surge shipping, force sustainment, JLOTS (Joint Logistics Over the Shore).

(4) Civilian-manned and operated program, supported by the Merchant Marine Reserve (MMR) community.

B. Mission and functions of the U.S. Merchant Marine

1. Discuss mission of the U.S. Merchant Marine according to Title I of the Merchant Marine Act of 1936.

2. Functions of the U.S. Merchant Marine

a. Peacetime

(1) Carry U.S. maritime commerce (economic function)

(2) Carry government aid overseas (political function)

(3) Support peacetime military operations (military function)

b. Wartime (National Emergency)

(1) Sustain economy and war industries of U.S. and allies

(2) Serve as naval/military auxiliary:

(a) Sealift (prepositioned, surge, resupply/sustainment)

(b) Direct support of naval forces, e.g. through underway replenishment (UNREP).

3. Note interdependence of Navy and Merchant Marine: Navy provides protection (part of forward presence in peacetime and sea control in wartime) and receives merchant support in sealift and logistics (direct support).

C. National Interests and the Navy's Mission

1. Review U. S. national interests from previous lesson.

2. Explain how we define the sea services' role in protecting these interests.

a. National security policy is a doctrine designed to guide all aspects of the U.S. Government's response to the current threats to our national interests.

b. National military strategy defines how the U.S. Armed Forces will support the national security policy. (Other branches of the government also have strategies for fulfilling their roles in the national security policy; for example, the State Department has a foreign policy that guides our diplomatic efforts to maintain our national security.)

c. Maritime strategy defines the part that sea services (Navy, Marines, and Coast Guard, with the support of the U.S. Merchant Marine) will play in the national military strategy.

3. Discuss reasons for the reshaping of the national security strategy that occurred throughout the 1990’s.

a. Decreased global threat to our national security with the demise of the Soviet Union, combined with increase in regional threats to our security and interests.

(1) Increasing intensity of ethnic conflicts and other local wars unleashed from effective superpower control.

(2) Increases in terrorism and drug trade.

(3) Increased concern over proliferation of nuclear, chemical, and biological weapons.

(4) Potential for increased unrest in developing countries due to rapidly mounting economic, ecological, and demographic problems.

b. Constraints on defense spending.

4. In response to post-Cold War conditions, President Bush articulated a new national security policy in 1989: To maintain global stability by focusing on regional contingencies in trouble spots where national interests are involved. President Clinton further enhanced this with his Strategy of Engagement and Enlargement (engagement refers to exercising active leadership in the world community; enlargement refers to enlarging the community of free market democracies to include more countries and people). The basic goals of this strategy are:

   a. To credibly sustain our security with military forces that are ready to fight.

   b. To bolster America's economic revitalization.

   c. To promote democracy and free trade abroad.

5. The defense strategy that supported the goals of this national security policy rested on four pillars:

   a. Strategic deterrence and defense to prevent or deter the use of nuclear weapons against the U.S. or allies.

   b. Forward presence to engage potential threats to our security, but relying more heavily on the Navy and Marines and with smaller land forces in Europe and Korea than during the Cold War.

   c. Crisis response, to be able to rapidly establish a presence when regional contingencies threaten our interests.

   d. Force reconstitution, to be able to rapidly rebuild our military strength if a crisis escalates by maintaining a military reserve organization, war reserve materials, and a defense industrial base.

6. This national defense strategy prompted a major shift in our national maritime strategy, as explained in the Navy-Marine Corps white papers "From the Sea" (1992), and "Forward ... From the Sea" (1994), which described the basic precepts of this new strategy as the following:

   a. With the breakup of the Soviet Union and the reduced tensions between Russia and the West, it is assumed that there will be no serious challenge to our sea control on the high seas.

b. The lack of a high seas maritime threat allows us to focus our efforts in the littoral (near-land) regions of the oceans, near any adversary or trouble spot where U.S. military force is needed. This is a taxing combat environment, with mines, land-based aircraft and cruise missiles, fast patrol craft, and diesel submarines threatening our naval forces. We would thus:

   (1) Concentrate sea control capabilities near land to protect local sea areas and power projection forces.

   (2) Use power projection to attack or control areas that can be supported or defended directly from the sea.

c. "From the Sea" recommended the use of joint task forces (JTFs) tailored to contain appropriate assets from each service and from any allied forces available.

d. "From the Sea" pointed out that we needed to improve our capabilities in:

   (1) Joint command, control, communications, computers, and intelligence (C^4I)

   (2) Battle space dominance

   (3) Power projection

   (4) Force sustainment (i.e., logistics and sealift -- the role of the merchant marine national strategy)

e. "From the Sea" implied that no fundamental change has occurred in the functions of the Navy (or the merchant marine), but that there is an increased emphasis on the use of power projection and sea borne logistical capabilities (maritime repositioning/sealift) to influence events on land.

f. "From the Sea" also recognizes the need to work within set budget constraints.

g. "Forward ... From the Sea" reintroduced the idea of using naval forces across the spectrum of conflict.

   (1) Peacetime forward presence operations: To build interoperability, reach out to potential allies, and ensure continuing deterrence against regional conflict and the use of nuclear weapons.

(2) Crisis response: To provide credible deterrence to regional conflict and open the door for military intervention, if necessary.

(3) Regional conflict: To serve as a transition force while land-based forces are deployed, and to support those forces once they are in place.

(4) Joint and combined operations: Used to respond to the wide variety of possible threats.

7. The strategies outlined in "From the Sea" and "Forward…From the Sea" fostered the development of a new maritime strategy that better combats the unique global threats of the 21st century. Sea Power 21 is the Navy's global maritime strategy for the 21st century that employs America's unique strengths such as "computing, systems integration, a thriving industrial base, and the extraordinary capabilities of our people" in order to exploit our fleets' superiority, strengthen our ability to deter our enemies, improve our response to national and global crises, and to "win decisively in war." To achieve these end-results, the Sea Power 21 global maritime strategy utilizes three sea-linked capabilities named Sea Strike, Sea Shield, and Sea Basing.

a. The Sea Strike capability will employ intelligence, surveillance, and reconnaissance assets and tactics to accurately conduct time-sensitive and covert strike operations using unmanned combat vehicles, hypersonic missiles, and other future combat technologies.

b. The Sea Shield capability will employ aircraft, ships, submarines, and unmanned vehicles to protect our allies worldwide and our homeland by using layered defense tactics like "control of the sea, forward presence, and networked intelligence."

c. Finally, the Sea Basing capability exploits the benefits of the world's seas by strategically positioning naval platforms around the globe from which Sea Strike and Sea Shield assets can be launched, maintained, and commanded.

D. Administrative and Operational Organization of the United States Navy

1. Review the Administrative Chain of Command of the Navy, from the President to a ship's Captain.

Administrative chain of command deals with equipping, training, and manning the Navy:

- President
- Secretary of Defense
- Secretary of the Navy
- Chief of Naval Operations
- COMPACFLT/COMLANTFLT
- Fleet Commanders
- Type Commanders (Air, Sub, Surface)
- Group Commanders/Air Wing Commander (CAG)
- Squadron Commanders
- Ship/Aircraft Squadron

2. The Operational Chain of Command is used to employ and direct navy units in day-to-day and national emergency operations:

- President/Secretary of Defense (National Command Authority)
  * Chairman of the Joint Chiefs of Staff (Principle Military Advisor to President)
- Unified Commanders [Northern Command (NORTHCOM), European Command (EUCOM), Central Command (CENTCOM), Southern Command (SOUTHCOM), Pacific Command (PACCOM), Transportation Command (TRANSCOM), Special Operations (SOCOM), Strategic Command (STRATCOM), and Joint Forces Command (USJFCOM)]
- Component Commanders
- Naval Component Commanders (COMLANTFLT, COMPACFLT, COMUSNAVEUR)
- Fleet Commanders (Second Fleet, Third Fleet, Fifth Fleet, Sixth Fleet, Seventh Fleet)
- Task Force Commanders (Group Commanders)
- Task Group Commanders (Group or Squadron Commanders)
- Task Unit Commanders (Squadron or Ship CO)
- Task Element Commanders (Squadron or Ship CO)
- Ship or Squadron

* NOTE: May be tasked to communicate to Unified Combatant Commanders for the President or Secretary of Defense, but not in the official chain of command.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 13 **HOURS: 1**

TITLE: The Merchant Marine Today

I. Learning Objectives

A. The student will discuss the current status of the U.S. Merchant Marine, including the current system of government aid, the current problems which prevent U.S. registry shipping from effectively competing in international trade, the economic and political currents at work to limit government support, and proposed legislation which would affect U.S. registry shipping.

II. References and Texts

A. Instructor References

1. U.S. Department of Transportation, MARAD, "Annual Report" (Available online at www.marad.dot.gov.)

2. The Abandoned Ocean

3. "The Merchant Marine Act of 1936" (in Compilation of Maritime Laws)

4. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

C. Student Reference: The Abandoned Ocean

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion. Use the latest annual MARAD report to illustrate the various Merchant Marine programs and the current state of the U.S. flagged Merchant Marine. The Abandoned Ocean refutes many of the traditional arguments of why the U.S. Merchant Marine is so weak.

B. Procedural and student activity options

1. Have students make a brief oral presentation or write a paper on specific current issues in the Merchant

Marine (for example, legislation, economic trends affecting shipping, technological innovations in the field, etc.).

2. Have students review the MARAD web site for information on issues confronting today's Merchant Marine for in-class discussion.

V. Presentation

A. Review Merchant Marine mission and functions

1. Mission (Title I of the Merchant Marine Act of 1936)

2. Peacetime functions

3. Wartime functions

B. Major Merchant Marine legislation of the 20th century (Discuss provisions plus background -- i.e., what prompted this legislation?)

1. Military Transportation Act of 1904

2. Merchant Marine Act of 1920 (includes the Jones Act)

a. Jones Act/Cabotage Law

b. Construction loans

c. Other provisions

3. Merchant Marine Act of 1928

4. Public Resolution 17 (1934)

5. Merchant Marine Act of 1936

a. Construction differential subsidy (CDS)

b. Operating differential subsidy (ODS)

c. Capital reserve fund (CRF)

d. Federal ship financing guarantee

e. Other provisions

6. Sales Act, 1946

7. Cargo Preference Act, 1954

8. Merchant Marine Act of 1970

a. Extension of CDS/ODS

b. Capital construction fund (CCF) -- modification of CRF

c. Shipbuilding goals

9. Cargo-sharing agreements with Brazil, USSR, Argentina, China

10. Maritime Education and Training Act of 1980: New MMR program designed to address difficulty of maintaining the necessary reserve of trained merchant mariners to man a larger wartime merchant marine.

11. Shipping Act of 1984

12. Maritime Security Act of 1996

13. Voluntary Intermodal Sealift Agreement Program (VISA), 1997

C. Explain the current system of aid to the U.S. Merchant Marine. (Tie to above legislation and explain how each part of the system is supposed to work to help the shipping industry.)

1. Direct subsidies

a. Construction differential subsidy (CDS) -- currently not funded.

b. Operating differential subsidy (ODS) -- Funding contracts with various companies have begun to expire, with the last one due to expire in 1998. Congress has not renewed funding for any contracts, and MARAD has begun to approve U.S. flag companies' requests to reflag overseas.

c. Maritime Security Program (MSP) -- The MSP was established by the Maritime Security Act of 1996. It provides approximately $100 million annually (until FY 2005) for up to 47 vessels to partially offset the higher operating costs of keeping vessels under U.S. flag registry. MSP payments represent approximately 13 percent of the cost of operating U.S. flagged vessels. MSP has been reauthorized through fiscal year 2015.

2. Indirect subsidies

a. Capital construction fund (CCF)

b. Federal ship financing guarantee

c. Government-generated cargo system

d. Cabotage Law ("Jones Act")

e. VISA -- VISA meets national emergency sealift mobilization requirements by creating a partnership between the U.S. government and commercial entities who provide sealift and intermodal shipping services and systems. VISA participants receive priority for award of DoD peacetime cargo.

D. Discuss current status of the Merchant Marine, including predictions and trends for comparison. (Update with figures from the most recent issue of U.S., MARAD, Annual Report.)

1. Total U.S. flag privately owned deep draft fleet. (See www.marad.dot.gov, the MARAD web site, for most recent figures on international and domestic shipping.)

2. U.S. flag vessels carry 4.0% of our total ocean-borne foreign trade by volume and 15.4% by value. In the liner trade, U.S. flag ships have a 17.0% share by volume and 20.9% by value. U.S. flag non-liners and tankers carry less than 3% of their respective trades by volume and less than 4% by value. (See MARAD 192, Table 9, for ten-year trends in these figures). In general, absolute tonnage and value of U.S. flag cargoes have increased slightly over the last 10 years, but the market share (i.e., percentage of the total trade carried) of U.S. flag companies has decreased somewhat in most cases.

3. Operating subsidies are discussed in detail and change frequently on the MARAD web site.

4. U.S. flag shippers say they are hampered in their efforts to compete with foreign flag companies in a business with a low profit margin, because of higher safety standards, restrictive regulations, high costs of crewing with U.S. sailors, high costs of building and repair in U.S. shipyards (required by law for U.S. flag vessels), the requirement to incorporate expensive national defense and safety features, and higher taxation. Even U.S. companies operating the flag of convenience shipping have been hurt in the last decade by new laws requiring them to pay taxes on profits earned on foreign assets.

5. U.S. shipbuilders are not competitive on the world market and are almost exclusively limited to government contracts for new construction and conversion business.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 14 **HOURS: 1**

TITLE: The Role of the Merchant Marine in National Security

I. Learning Objectives

A. The student will relate the importance of the U.S. Merchant Marine to the nation's military and economic security.

B. The student will identify the national security functions of the U.S. Merchant Marine, including its integration/cooperation with the U.S. Navy in peacetime and wartime situations.

C. The student will recall the significant events in the history of the U.S. Merchant Marine, including legislation and business climates that have affected its operation.

II. References and Texts

A. Instructor References

1. U.S. Department of Transportation, MARAD, "Annual Report" (Available online at www.marad.dot.gov.)

2. The U.S. Merchant Marine: In Search of an Enduring Maritime Policy (optional)

3. "Maritime Administration Emergency Operations" (Operations Plan 001A)

4. Compilation of Maritime Laws

5. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/class discussion

B. Procedural and student activity options

1. Have students make a brief oral presentation or write a paper on specific current issues in the merchant marine (for example, legislation, economic trends affecting shipping, technological innovations in the field, etc.).

2. Have students prepare for a debate on discussion question noted in paragraph V.A. (below) on the pros and cons of maintaining a strong U.S. flag shipping industry.

3. Have students review the MARAD web site for information on issues confronting today's merchant marine for in-class discussion.

V. Presentation

A. Discussion question: "Do the benefits to our economic and military security of maintaining the U.S. flag merchant marine outweigh the costs to our taxpayers, businesses, and consumers?" *(INSTRUCTOR NOTE: The points listed below are provided to help the instructor guide the discussion. They are not an exhaustive list of the arguments on the subject, but may be used to stimulate student discussion.)*

1. Economic security benefits

a. David Ricardo's thesis (19th century English economist): Given the choice to trade or not to trade, a country will always benefit more economically from choosing to trade. The U.S. is now closely tied to the global economy, and anything curtailing our ability to trade could devastate our economy.

b. The U.S. economy depends on foreign trade: 7.4% of our gross national product (GNP) derives from commodity exports.

c. Of U.S. foreign trade, 90% by volume and 85% by value is carried by sea.

d. For the last decade, only about 4-5% of U.S. ocean-borne foreign trade has been carried in U.S. ships by volume, and 12-16% by value.

e. While shipping receipts form a small fraction of our GNP, increased U.S. flag shipping has the potential to positively influence employment, GNP, and our balance of payments in foreign trade.

f. While it may seem unlikely in the near-term, there is a possibility that significant blocks of shipping could be withdrawn through a boycott of foreign nations on U.S. trade in the event of a war or international crisis. In such an event,

we would feel adverse economic effects. (This is one basic reason why Mahan felt we should carry trade in our own ships.)

g. Other industrialized nations (e.g., Germany, Japan, and South Korea) obviously believe that the national benefits of maintaining healthy shipping and shipbuilding industries outweigh the costs of heavy government subsidies, even though their merchant marines play a minimal role in their own national military strategies.

h. Many U.S. shipping companies have changed the flag or registry of their vessels from the U.S. to that of a foreign country in order to avoid paying higher U.S. wages to their mariners and to avoid compliance with U.S. labor, tax, and ship construction laws. When ships of one country fly the flag of another country, they are said to be flying a "Flag of Convenience." Flag of convenience shipping allows U.S. and foreign shipping companies to profit from lower operating costs. However, this also prevents these vessels from engaging in the domestic or coastwise trade of the U.S. Remember, the Jones Act only allows U.S. flagged and owned vessels manned with U.S. mariners to carry cargo between U.S. ports. Repealing the Jones Act would allow these vessels to operate between U.S. ports and inland waterways without adhering to the same labor, tax, and ship construction regulations to which U.S. flagged vessels adhere.

2. Military security benefits

a. Our nation maintains a policy of forward defense that cannot be supported without adequate sealift. While the U.S. government-owned fleet is increasing, we still rely on privately owned merchant ships for "surge shipping" in the first 30 days or so of conflict (before laid up shipping reserves can be activated).

b. We rely primarily on imports for 68 of 71 strategic minerals and also import approximately 50% of our oil. A major boycott by foreign flag shippers could severely diminish our defense industries' capabilities to conduct a prolonged war effort.

c. Airlift and airborne trade are not viable options for the vast majority of sealift and defense industry cargoes.

d. We must maintain a substantial body of trained merchant mariners to man reserve ships activated in wartime.

e. A shipbuilding industry with substantial construction and repair work on merchant ships is the only way to avoid a costly "arsenal system" in which a small number of shipyards are maintained at high expense (due to monopoly pricing and lack of economies of scale) through government contracts for naval and sealift vessels. A future expansion in shipbuilding to meet the needs of a prolonged war would take years to get under way (as it did prior to World War II) -- years that we may not have.

f. A carefully regulated system of subsidies for militarily useful shipping is a much more cost effective means of maintaining a wartime shipping capability than a huge government-owned fleet that is under-utilized in peacetime.

3. Costs of maintaining a U.S. flag merchant marine

a. Direct cost to the taxpayer of paying subsidies (sometimes referred to as "corporate welfare" in current political debate) necessary for U.S. flag companies to compete in the international shipping market.

b. Cost to businesses and consumers of protectionist measures, such as cabotage laws, cargo preference laws, etc.

(1) Prices of goods shipped by sea between U.S. ports are significantly higher due to the Jones Act, preventing competition from lower cost foreign-flag companies. This effect is particularly felt where there is little or no competition from land transportation (e.g., high consumer prices in Alaska, Hawaii, and Puerto Rico; higher costs for Alaskan crude oil).

(2) Cargo preference laws and cargo sharing agreements between nations, if strictly enforced, would raise prices of imported goods for U.S. consumers, reduce the competitiveness of U.S. exports in foreign markets, and increase costs to the U.S. government for shipping military and foreign aid cargoes overseas due to higher shipping costs.

c. Discuss: Can these costs be reduced to acceptable levels through careful targeting and frequent review of subsidies and protectionist

legislation? Does the existence of subsidies and protective legislation create a powerful interest group that will perpetuate itself at the expense of the taxpayer, without regard to the military and economic needs of the nation?

B. Review merchant marine mission and functions

1. Mission (Title I of the Merchant Marine Act of 1936)

2. Peacetime functions

a. Carry U.S. maritime commerce (economic function)

b. Carry government aid overseas (political function)

c. Support peacetime military operations (military function)

3. Wartime functions

a. Sustain economy and war industries of U.S. and allies

b. Serve as naval/military auxiliary:

(1) Sealift

(2) Direct support of naval forces

(3) Auxiliary combatant

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 15 **HOURS: 1**

TITLE: Sources of Shipping in Peacetime and in National Emergency

I. Learning Objectives

A. The student will discuss the major elements of the peacetime merchant marine organization, including the Military Sealift Command.

B. The student will explain how the federal government can expand the shipping available for its needs in time of war or national emergency.

C. The student will understand the usefulness of different types of merchant ships for military operations and the problems that each type poses for adaptation to military uses.

II. References and Texts

A. Instructor References

1. U.S. Department of Transportation, MARAD, "Annual Report" (Available online at www.marad.dot.gov.)

2. MSC web site at: http://www.msc.navy.mil

3. SDDC web site at: http://www.sddc.army.mil

4. USTRANSCOM web site at: http://www.transcom.mil

5. "Maritime Administration Emergency Operations" (Operations Plan 001A)

6. Naval Science for the Merchant Marine

B. Student Text/References

1. Naval Science for the Merchant Marine

2. U.S. Department of Transportation, MARAD, "Annual Report. (Available online at: www.marad.dot.gov.)

3. MSC website at: www.msc.navy.mil

4. SDDC website at: http://www.sddc.army.mil

5. USTRANSCOM website at: http://www.transcom.mil

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overheard projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

B. Procedural and student activity options

1. Have students review the web sites for information on MSC shipping and missions, and the role of SDDC and USTRANSCOM.

2. Have students review the MARAD web site for information on emergency shipping procedures.

V. Presentation

A. U.S. Merchant Marine organization

1. Privately-owned fleet

a. U.S. flag

b. Flag of convenience (also referred to as "Effective U.S. Control" or EUSC)

2. Government-Owned Fleet

a. USTRANSCOM: Unified commander of all of America's global defense transportation system. It is composed of the Air Force's Air Mobility Command (AMC), the Army's Military Surface Deployment and Distribution Command (SDDC) (formerly named the Military Traffic Management Command (MTMC)), and the Navy's Military Sealift Command (MSC).

b. SDDC (formerly MTMC) provides global surface transportation to meet national security goals in peace and war.

(1) Responsible for surface cargo movement and port management.

(a) In Desert Storm, MTMC managed the movement of 85% of the unit equipment shipped to Saudi Arabia.

(b) Operated out of 33 ports worldwide.

(2) Responsible for surface passenger and personal property programs.

c. Military Sealift Command

(1) Permanent force of government-owned, civilian-manned vessels operated by DOD for military purposes.

(2) Primary mission to support sealift requirements of all military services in war or national emergency.

(3) Functions

(a) Contingency sealift for U.S. military operations, e.g., Persian Gulf War and the war in Iraq.

(b) Plan for emergency expansion of sealift and government shipping from peacetime to wartime capacity

(c) Peacetime logistical support of U.S. military forces

(d) Operation of naval auxiliary vessels

(e) Provision of Defense Department ocean shipping for non-transportation purposes, e.g., scientific research support for NASA and Antarctic missions, etc.

(4) Civilian-manned command within the Navy organization comprised of two fleets:

(a) The nucleus fleet (vessels, government-owned or bareboat chartered from private owners) is manned by government employees and is mostly used for direct support of the Navy fleet.

(b) The chartered fleet (vessels on voyage or time charter, manned by the chartering company) is used to fulfill other shipping needs, e.g., shipping military cargoes and the household goods of military families to overseas bases.

(5) MSC also controls the strategic sealift force, consisting of preposition ships (private-owned U.S. flag vessels under long-term contract to MSC), and fast sealift ships:

(a) Prepositioning Ships: MSC operates more than 30 ships in its

Prepositioning Program to support the U.S. military's "Forward ... From the Sea" strategy. These ships are pre-loaded with military equipment and supplies needed for a war or other contingency. The ships are strategically positioned in key ocean areas, making it possible to deploy on short-notice the vital equipment, fuel, and supplies to initially support our military forces whenever needed. Prepositioning ships are sub-divided into three separate categories, based on the U.S. military customers they support. The ships include: the Combat Prepositioning Force supporting the Army; the Maritime Prepositioning Force supporting the Marine Corps; and the Logistics Prepositioning Ships supporting the Navy, Defense Logistics Agency, and Air Force. All propositioning ships are under the operational control of MSC area commands, directly supporting the Navy's fleet commanders in chief. The actual day-to-day control of the ships is carried out by one of four MPS squadrons. Those squadrons, each commanded by a Navy captain, include: MPS Squadron One, usually located in the Atlantic Ocean or Mediterranean Sea; MPS Squadron Two, usually located at Diego Garcia; MPS squadron Three, normally in the Guam/Saipan area; and Afloat Prepositioning Squadron Four which supports the U.S. military's U.S. Central Command in the Persian Gulf area.

(b) Fast sealift ships: 8 vessels maintained by MSC on 4-day readiness status for surge shipping from U.S. to the site of a military deployment.

d. National Defense Reserve Fleet (NDRF) (maintained by MARAD)

(1) Ready Reserve Fleet (RRF): Consists of 90 vessels, on 5/10/20-day call. Of 96 ships then in the RRF, 79 were used during Desert Shield/Storm to transport one-third of the equipment and one-fifth of the total dry cargo used. These ships exceeded

expected performance, despite many having been in long lay-ups. Activated ships were tendered to MSC and manned by merchant sailors. This was the fastest sealift buildup in history and the largest since the Vietnam War.

(2) Another 220 vessels belonging to the NDRF are active or inactive vessels not assigned to the RRF, of which 112 are maintained on long- term call for the possibility of a large, long- term war.

(3) NDRF ships are located at NDRF anchorages on each coast (Suisun Bay, CA; Beaumont, TX; James Bay, VA). Some RRF ships are "out ported" or berthed at other ports close to their activation sites to reduce delays when activated.

B. Activation Procedures: How the government gets ships for war/national emergency. Details are provided in MARAD OPLAN 001A.

1. MSC Strategic Sealift Force

2. MSC Chartered Fleet

3. RRF

4. Privately owned U.S. flag vessels available under special voluntary agreements between the government and the company.

5. Other privately owned U.S. Flag merchant ships obtained through:

a. Commercial contract on the open market. This was used during the Gulf War to contract with U.S. and allied flag shipping companies.

b. Requisition (i.e., borrow ships with fair compensation). The National Shipping Authority (NSA) would control the use of all U.S. flag ships in a major war and could tender requisitioned ships to MSC for military use.

6. NDRF ships -- Activation of these would allow some privately owned vessels to return to commercial trade during an extended war effort.

7. U.S. privately owned ships registered under flags of convenience, referred to as Effective U. S. Control (EUSC) ships for sealift planning purposes. Normally, these would be kept in their normal trade activities; but if owners are unresponsive to NSA, or if a special need arises, they might be requisitioned under the

Merchant Marine Act of 1936 provisions. Most EUSC ships are registered in Liberia, Panama, Honduras, the Bahamas, and the Marshall Islands.

8. Allied flag ships -- If NATO is involved in the war, ships of member nations would be in a common pool, allocated as needed in the best interests of the alliance. Allied shipping under U.S. control would be treated as voluntary charters under the Emergency Foreign Vessels Acquisition Act. During the Gulf War, 22.6% of the cargo was carried by allied flagged ships.

9. Neutral ships -- The right of angary is a traditional maritime right, which the U.S. government claims under the Emergency Foreign Vessels Acquisition Act. We can requisition neutral ships in U.S. waters, if needed. This right is maintained in principle but would be practiced only in rare circumstances due to the obvious diplomatic difficulties that might ensue. NSA would maintain cognizance of all neutral ships carrying U.S. trade with neutral nations in order to control imports and exports, ensuring the national priorities of the war effort are being met.

10. Prizes -- Any merchant ships captured in war, once adjudicated by a prize court, can be reflagged and operated by the U.S. government. (With present practice and modern weaponry, this situation will probably not be common in the near future.)

11. MSP and VISA -- In return for MSP financial assistance, carriers must commit 100% of the capacity represented by these vessels and other transportation resources to a DoD-approved Emergency Preparedness Program (EPP). This is accomplished through VISA partnerships between MARAD, U.S. Transportation Command, and the participating U.S. flag carriers.

C. The main merchant ship types that can be used in military operations are:

1. Breakbulk: These ships are the most useful carriers of dry cargo because they are self-sustaining (i.e., they do not need special port facilities to unload). Disadvantages of this type are that they are no longer commercially viable and are labor-intensive to load/unload. Mostly available in RRF/NDRF today. Can carry any type of cargo, including outsize equipment like tanks/artillery pieces.

2. Roll-on/Roll-off (RO/RO): These ships are very useful, but not all ships of this type have reinforced decks of the correct dimensions for carrying large armored vehicles. They are most easily unloaded at pierside, but can be unloaded to floating causeway sections at anchor in light seas for amphibious operations or

unloading across an unimproved beachhead. Most militarily useful RO/RO's are in the RRF. Most commercial RO/RO's are Japanese flag car-carriers.

3. Barge Ships (LASH -- Lighter Aboard Ship, and Seabee Classes): These ships are extremely useful for early phases of over-the-shore logistics, because they carry their own lighterage, which can then be used to support offload of later arriving ships. They are excellent for carrying outsize cargoes and can lower their barges into the sea with a gantry crane or elevator, then steam off and reload. They are useful in commercial shipping when cargo is destined for numerous coastal or river ports (e.g., Mississippi River system), but being supplanted by container ships in areas with good road/rail transport. Several are in the RRF now.

4. Containerships: These ships are the most commercially viable ship type, but are less useful for many military operations because they are not self-sustaining and cannot carry outsize cargo such as tanks and artillery pieces without special adaptations. If no container port is available, they require support of a crane ship to offload containers to lighterage or piers. They are best for follow-on resupply effort once a container port has been secured or a beachhead port facility has been constructed.

5. Tankers

   a. Small tankers (less than 40,000 tons) are excellent for transporting fuel from port to an amphibious beachhead or to naval vessels operating at sea for underway replenishment (UNREP) and UNREP consolidation (CONSOL).

   b. Medium tankers (40,000-100,000 tons) are useful for bulk transport to major shore side oil depots in theatre but are too large and unmaneuverable to directly support naval or amphibious forces.

   c. Large tankers (greater than 100,000 tons) are too large to enter most ports and are, thus, not useful to the military.

6. Specialized ships, such as crane ships, hospital ships, aviation support ships, and heavy lift ships (also known as float-on/float-off ships or FLO/FLOs) are converted or built and maintained exclusively by the Navy or MSC as needed.

7. Some types of commercial merchant ships are not useful for military operations, e.g., dry bulk ships, liquid natural gas tankers (LNGs), etc.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 16 **HOURS: 1**

TITLE: Civil Direction of Shipping Organization (CDSORG) and Naval Cooperation and Guidance for Shipping (NCAGS) Organization

I. Learning Objectives

A. The student will explain how the Civil Direction of Shipping Organization (CDSORG) directs or regulates all shipping assets not under DOD control in war or national emergency situations.

B. The student will discuss the purpose, organization, and principles of operation of the Naval Cooperation and Guidance for Shipping (NCAGS) organization that would be implemented to ensure the safe passage of merchant shipping and the safety of naval vessels or the nation in a crisis situation.

II. References and Texts

A. Instructor References

1. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

2. EXTAC 1013 (Rev. A), "International Regional Naval Control of Shipping"

3. NTTP 3-07.12, "Naval Cooperation and Guidance for Shipping"

4. "Maritime Administration Emergency Operations (Operations Plan 001A)"

5. Naval Science for the Merchant Marine

B. Student Texts: None

III. Instructional Aids

A. Chalkboard

B. Handouts

C. Transparencies

D. PowerPoint presentation

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

B. Procedural and student activity options: None

V. Presentation

A. Civil Direction of Shipping Organization (CDSORG)

1. Controls employment of all ships not under direct control of DOD during wartime situation. Civil direction of shipping would be activated by the President upon commencement of or in anticipation of hostilities or other national emergency. Employment refers primarily to the following aspects of ship operation:

a. Cargo selection, loading, discharge and storage

b. Maintenance and repair

c. Manning

d. Harbor movements

e. Itinerary (referring to cargo loading and discharge ports, no routing between ports)

2. CDSORG effectively performs the functions that ship owners do in peacetime. Its purpose is to optimize use of shipping and ports to support wartime needs, including defense resources and economic support for our allies. Generally, the CDSORG would attempt to fulfill its mission with the least possible disruption to commercial trade, preferring to monitor and persuade ship owners to cooperate with national priorities. If this fails, the ships in question can be requisitioned for either civilian or military use.

3. CDSORG is headed by the National Shipping Authority (NSA), a wartime body constituted from the MARAD peacetime staff and augmented as necessary from other agencies and private corporations. Responsibilities of NSA:

a. Supervises requisitioning of ships (for fair compensation) and charters them to U.S. liner companies to operate in the national interest or tenders them to MSC for military use.

b. Supervises U.S. liner companies acting as its general agents. These companies would be paid for use of their cargo handling and management facilities for efficiently managing government-owned or controlled cargo.

c. Controls import and export shipping to ensure national priorities are efficiently met.

d. Provides war risk insurance for ships sailing into combat areas.

e. Supervises federal port controllers to coordinate the most efficient use of port facilities.

f. Has authority to sub-charter ships to MSC to meet up to 25% of the military's shipping needs.

4. CDSORG was not activated for Operations Desert Storm/Shield nor for Operation Iraqi Freedom because of the long buildup time and due to the large amount of allied shipping that was available. Additionally, peacetime shipping was only minimally disrupted as a result of each conflict.

5. In the event of a NATO war, the Defense Shipping Agency (DSA) would represent all allied nations and perform the functions of NSA on an alliance-wide scale for all ships dedicated to allied control by their governments.

B. Operations Desert Storm/Shield tested our wartime shipping capabilities and organization, and resulted in a list of lessons learned. The following outlines the wartime shipping efforts in support of Desert Storm/Shield:

1. The buildup occurred under ideal conditions. (e.g., The allies controlled shipping and air lanes, we had six months of buildup time before the fighting started, there were modern container ports without war damage in the deployment area, international support allowed foreign shipping to help U.S. flag efforts, good shipyards were available in theatre, and ample supplies of fuel were locally available.)

2. The RRF achieved 93% reliability after activation, even though only 21 of 79 ships had actually been test activated. Phased activation eased difficulties in repair/activation/crewing, but with less buildup time, this area may be a bottleneck.

3. Activation delays occurred due to shipyard requirements, distance of ships from activation sites, crewing problems, crew error, etc. These delays would have been much worse if the whole RRF had been activated simultaneously.

4. MARAD received outstanding cooperation in crewing from the unions. It took only 4-5 days to man most ships. The war created 3000 jobs overnight in a normal job market of 11,000 seagoing billets. Many former mariners were deterred from helping because they had no reemployment rights (unlike military reservists). Legislation to fix this problem has not passed.

C. The lessons learned from Desert Shield/Storm ultimately formulated the sealift strategy that would be used to support Operations Enduring Freedom and Iraqi Freedom. The following briefly outlines the wartime shipping efforts that supported these operations in Iraq:

1. 40 RRF ships were activated to support Army and Marine Corps missions during the operations providing almost 22% of the total combined surge sealift capacity.

2. 100 vessels participating under MARAD's Maritime Security Program (MSP) and Voluntary Intermodal Sealift Agreement (VISA) were utilized in surge sealift to support the war, while an additional 9 vessels were used to carry cargo to support the rebuilding of Iraq.

3. 84% of the cargo moved in Operation Iraqi Freedom was carried aboard U.S. flagged vessels and moved through 11 of the 14 strategic ports.

4. Over 7,600 mariners sailed aboard the various ships supporting the Operation Iraqi Freedom, including almost 3,900 commercial mariners and nearly 3,800 civilian service mariners.

5. The successful sealift efforts that supported Operations Enduring and Iraqi Freedom were made possible by the close cooperation among MARAD, ship managers, maritime labor unions, and the Military Sealift Command.

D. Naval Cooperation and Guidance for Shipping (NCAGS)

1. The purpose of NCAGS is to assist theater and operational commanders in managing risk by providing situational awareness and near real-time clarity of the merchant shipping picture so as to:

   a. Ensure the safe passage of merchant shipping and the safety of naval vessels in the Area of Operation (AOR).

   b. Aid in the homeland defense of the nation during a crisis situation.

2. The missions of NCAGS are to:

   a. Establish a framework for communicating directions, advisories, concerns, and/or information among NCAGS organizational elements.

   b. Deconflict merchant vessel sailings and operations for safety or operational reasons, and to preclude interference with naval or other merchant ship activities.

c. Make recommendations to theater and operational commanders on the extent and type of protection that may be provided to merchant shipping.

3. NCAGS accomplishes its mission objectives through:

a. The establishment of theater/operation area Shipping Coordination Centers (SCC's) that have the ability to globally track merchant vessels.

b. The deployment of shipping coordination teams (SCT's) and Naval Liaison Officers (LNO's), called Expeditionary NCAGS, who in conjunction with their SCC provide region specific support to theater and operational commanders.

4. NCAGS Organization

a. Shipping Coordination Centers provide Unified Commanders (USNORTHCOM, USEUCOM, USCENTCOM, and USPACOM) with near real-time merchant shipping information that improves their maritime domain awareness within the respective AOR. The key components of a SCC are:

(1) SCC Officer in Charge – exercises command and control over assigned facilities, assets, and personnel, and acts as the principal advisor to the respective Unified Commander regarding matters of merchant ship operations.

(2) SCC Operations Watch Supervisor – tracks all merchant shipping within the assigned AOR, utilizing all sources of electronic and open source data available, fusing multiple data sources to assist in the development and maintenance of the maritime picture.

(3) SCC Maritime Analyst – complies merchant shipping data from the Office of Naval Intelligence resources, joint maritime intelligence element database, ship arrival notification system database, and other various sources.

(4) SCC INMARSAT/Smart TRAC Operator – monitors, tracks, and manages merchant shipping data utilizing satellite transponder systems, naval oceanographic processing facility, and surface surveillance aircraft patrol data.

(5) SCC GCCS-M Operator – enters and maintains the position and relevant information on all merchant shipping within the assigned

AOR into the Global Command and Control System Maritime (GCCS-M).

b. Expeditionary NCAGS supplements the SCC organization through the regional deployment of shipping coordination teams (SCT's) and naval liaison officers (LNO's). The key components supporting Expeditionary NCAGS operations are:

(1) Theater Commander – following the approval for implementing an Expeditionary NCAGS from higher authority, the theater commander promulgates appropriate NCAGS policy to task force commanders; allocates naval and air forces, and other resource to support NCAGS; maintains communication security policy for merchant shipping; and maintains liaison with civil shipping authorities.

(2) Task Force Commander/Operational Commander – is responsible for the day-to-day NCAGS activities and for protecting merchant ship traffic within designated shipping risk areas.

(3) Carrier Strike Group Commander/Composite Warfare Commander (CSG/CWC) – may be assigned as maritime component commander and provides input to the Task Force Commander/Operational Commander for recommendations concerning NCAGS and executes the approved policies concerning merchant ship tracking, deconfliction, and protection.

(4) Surface Warfare Commander/Sea Combat Commander (SUWC/SCC) – in addition to their primary task force/CSG responsibilities, the SUWC/SCC are responsible for the tactical employment of assigned naval assets performing maritime surveillance, merchant ship tracking, identification, accompaniment, and interception operations.

(5) NCAGS Commander – is responsible for the execution of activities necessary to implement NCAGS policy. The NCAGS Commander maintains communication with the applicable shipping coordination center, directs shipping control team operations, assembles and maintains the merchant shipping plot, makes recommendations to superiors regarding the efficient management of merchant shipping in the AOR, disseminates NCAGS policy to the

maritime industry affected by military operations, and provides and employs NCAGS LNO's and SCT's. The NCAGS Commander will be one of the above operational commanders.

(6) NCAGS Liaison Officer (LNO) – when embarked on merchant vessels, provides merchant ship masters with situational information, advises the masters on ship movements through shipping risk areas, and acts as a liaison for operational matters affecting the subject vessel.

(7) NCAGS Shipping Coordination Team (SCT) – The SCT is a group of NCAGS subject matter experts who manage NCAGS matters either embarked, or at selected ports within the AOR. The SCT reports to the NCAGS Commander and provides information both to the NCAGS Commander and the SCC's relative to merchant shipping movements and information about the status of nearby ports and shipping lanes and passes information about NCAGS to merchant ship masters transiting or in port.

5. Information and benefits available from the NCAGS organization:

a. NCAGS maintains merchant vessel plots and establishes relationships and liaisons with worldwide private and government merchant marine organizations.

b. NCAGS provides shipping advisories when appropriate via Notices to Mariners (NOTMAR's).

c. NCAGS advises civil maritime authorities, via the Maritime Administration or the SCC, of general shipping risks in the area.

d. NCAGS offers protective guidance, recommending protective routing procedures.

e. NCAGS recommends merchant ship accompaniment/escort when necessary.

f. NCAGS provides relevant information in support of Maritime Interdiction Operations.

g. NCAGS assists in the enforcement of maritime exclusion zones.

h. NCAGS provides mandatory naval supervision of shipping during wartime.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 17 **HOURS: 1**

TITLE: The Merchant Marine in Military Operations

I. Learning Objectives

A. The student will recall the defense features that are required on U.S. Flag Merchant Ships constructed under the construction differential subsidy (CDS).

B. The student will be familiar with the current techniques for delivering sealift cargoes ashore when port facilities are not available.

C. The student will explain the ways merchant ships can be used in direct support of naval forces and how they must be altered to perform that role.

D. The student will specify how merchant ships could be modified to serve as auxiliary combatants and what roles such combatants could perform.

II. References and Texts

A. Instructor Reference: Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion

B. Procedural and student activity options: Show video segments and/or slides that deal with sealift, JLOTS, UNREP, etc., if available.

V. Presentation

A. National Defense Features

1. Required on all ships constructed under CDS, with plans reviewed by DON to ensure compliance.

2. Standards

a. Watertight compartmentation: Ships must be able to survive flooding of any single compartment.

b. Speed: Ships must be able to steam at 20 kts. (Tankers must be able to steam at 16 kts or 15 kts while pumping liquid cargo at 6000 gpm.)

c. Shock protection: Ships must have no cast iron mountings.

d. Electrical capacity: Ships must have electrical capacity or room for additional generators to accommodate installation of refrigeration and habitability modules for possible naval crew and weapons systems.

e. Distillation capacity: Ships must be able to make enough fresh water to support increased crew augmentation.

f. Chemical/Biological/Radiological (CBR) defense: Ships must have fittings for rigging wash down hoses.

B. Defense transportation requirements

1. To support forward deployed combat forces on land and at sea, we need an extensive, flexible, and capable logistics system. This system is managed by the U.S. Transportation Command (USTRANSCOM), which has operational command over MSC.

2. In the event of an expeditionary military deployment, sealift and airlift assets would move cargo into theater.

3. Cargo is then either offloaded and sent to land forces or transferred to ships capable of replenishing naval forces at sea.

4. In the event of a major military effort overseas, the transportation effort is divided into three phases.

a. Prepositioned: Afloat prepositioned ships arrive with their pre-loaded cargoes and deliver them to airlifted rapid deployment units.

b. Surge: Fast sealift ships, and any necessary RRF and privately-owned ships, load equipment and supplies in U.S. and deliver to theater of war to equip additional units airlifted from U.S. bases.

c. Sustainment: As necessary units become operational in theater, the sealift effort turns to maintaining the flow of supplies (food, fuel,

ammunition, spare parts, etc.) and replacement equipment needed to keep the military effort going.

C. Sealift operations are much like peacetime shipping operations when conducted before hostilities start and when the region of deployment contains adequate port facilities (e.g., our experience in Desert Shield). When these conditions do not apply, the mission is much more complicated and requires special equipment and self-sustaining ships.

1. If port facilities are inadequate, we may have to overcome many challenges, such as:

   a. Cargo delivery over an unimproved shoreline.

   b. Shallow ports that cannot handle deep draft sealift vessels.

   c. Ports with inadequate cargo handling or throughput capability for our needs.

2. In such situations, we use LOTS or JLOTS techniques to deliver the necessary volume of cargo to sustain our military efforts ashore. LOTS (Logistics Over the Shore) is the unloading of sealift cargo without adequate port facilities. JLOTS (Joint Logistics Over the Shore) is the same type of operation, but involves more than one service.

3. LOTS/JLOTS can be performed anywhere there is a beach and an adequately sheltered anchorage. It can be used for unopposed theatre build-up (e.g., the 1993-1995 Somalia peacekeeping operation) or as follow-on support for a land campaign developed from an amphibious assault. (A classic example of this would be the Normandy Invasion, in which we built an artificial harbor, code-named MULBERRY, until existing port facilities could be captured and repaired.) JLOTS capability increases our capacity to execute a land campaign in any littoral location.

4. JLOTS would use the following ship types: *(Use overheads to illustrate unfamiliar equipment.)*

   a. <u>Heavy lift ships (FLO/FLOs)</u> to carry tugs, lighters, floating cranes.

   b. <u>Crane ships (T-ACS)</u> to offload containerships.

   c. <u>RO/ROs</u> to carry tanks/wheeled vehicles offloaded using a RO/RO discharge facility constructed of floating causeway sections.

d. Breakbulk ships to carry outsized and palletized cargo, which they can offload directly to lighters.

e. Barge ships to carry outsized cargo, cargo handling equipment, and general cargo, all preloaded on lighters which can be reused to offload other ships.

f. Containerships to carry containerized cargo (or vehicles/outsized cargo with help of flatracks and sea sheds). Most are not self-sustaining and require a crane ship to offload them if no pierside container facilities are available.

g. OPDS (Offshore Petroleum Distribution Ships) tankers to pump fuel and water ashore using a SALM buoy.

5. Cargo would be carried to the beach or to a floating causeway or elevated causeway (ELCAS) pier using the following types of lighterage. *(Show overheads.)*

a. Landing craft (LCUs and LCMs)

b. Amphibious vehicles (LARCs)

c. Causeway ferries

d. LASH/Seabee barges

e. Air-cushion landing craft (LCACs and LACVs)

6. Beach facilities would be prepared by Navy Construction Battalions (CBs) or Army Corps of Engineers to ensure safe and efficient cargo transfer from ships to inland cargo depots. These units would:

a. Survey the seaward approaches to the beach.

b. Clear underwater obstacles to lighterage and tugs.

c. Rig fuel and water hoses from SALM buoys to shore fuel/water storage facilities.

d. Build an ELCAS pier, if needed, to unload lighterage beyond surf and sandbars.

e. Build roadways and install cargo handling facilities.

7. Port security provided by USCG port security detachments and Navy MIUW (Mobile Inshore Underwater Warfare) units.

D. Auxiliary combatant. We would use merchant ships in this role only as a last resort, as the British did in the Falkland Islands War.

1. Reserve Merchant Ship Defense System (RMSDS) is a proposal to convert containerships into temporary helicopter carriers by adding modular flight deck, hangar bay, fuel tanks, etc. Embarked helicopters could be used as anti- submarine warfare (ASW) escorts for a convoy, or could be gunships or cargo aircraft for amphibious assault, among other possibilities.

2. A number of Navy weapons systems are modular and could be rapidly installed on merchant ships if necessary for self-defense. It should be noted that as long as the weapons have only short-range defensive capabilities, their installation would not necessarily turn a merchant ship into an auxiliary combatant.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 18 **HOURS: 1**

TITLE: Underway Replenishment

I. Learning Objectives

A. The student will discuss the methods of replenishment at sea, including ship handling and safety considerations and main rigs and equipment used in each method.

II. References and Texts

A. Instructor References

1. NWP 14-2, "MSC Handbook on Replenishment at Sea"

2. NWP 14 (Rev. E), "Replenishment at Sea"

3. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

D. Videos:

1. "Replenishment at Sea: Basic Elements" (optional)

2. "Alongside Refueling"

E. VCR/Monitor

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion

B. Procedural and student activity options: Show video segments and/or slides that deal with UNREP, such as "Replenishment at Sea: Basic Elements" and/or "Alongside Refueling".

V. Presentation

A. Merchant Marine provides direct support to Navy operations, primarily through replenishment at sea. Underway replenishment is a 100% Merchant Marine Officer operation.

1. Concept of replenishment at sea: To carry out their mission, combatant ships must be able to stay at sea for prolonged periods, ready to carry out their assigned tasks. Because warships are designed with minimal storage capacity, a constant flow of fuel, ammunition, provisions, stores, and spare parts is needed to keep them at sea and combat-ready. The Navy keeps warships supplied with these products through underway replenishment with Navy-manned Combat Logistics Force (CLF) ships capable of providing all needed products. Civilian-manned MSC ships are used to transport needed products from their sources to safe ports in the theater of operations (sealift), and other MSC ships shuttle products from these ports to replenish (while underway) the CLF ships stationed with the Navy combat force (direct support). In wartime, privately owned merchant ships might be needed to replace or augment MSC ships performing this role.

2. Methods of underway replenishment (UNREP)

    a. Connected replenishment (CONREP) is used to deliver dry cargo or fuel between two ships steaming alongside each other and connected by a cargo delivery rig.

        (1) Ship handling considerations

        (2) Safety considerations

        (3) Fueling at Sea (FAS) rigs

            (a) Fuel STREAM (standard tensioned replenishment alongside method)

            (b) Non-tensioned spanwire fuel rig

            (c) Close-in fuel rig

        (4) Solid cargo transfer rigs

            (a) Missile/cargo STREAM

            (b) Burton

            (c) Housefall

            (d) Synthetic highline (light cargo only)

        (5) Personnel transfer rigs

            (a) Personnel STREAM

            (b) Synthetic Highline

b. Astern refueling is used to deliver fuel only when one or both ships do not have CONREP capability, e.g. when refueling small vessels or when delivery ship is a merchant tanker or NATO oiler. This method is safer and allows much greater maneuverability, but is much slower.

(1) Ship handling considerations

(2) Safety considerations

(3) Rig/equipment

c. Vertical replenishment (VERTREP): Helicopters are used to deliver dry cargo (including ammunition and passengers) only. Since this method is more rapid and simpler in terms of shiphandling, it is the preferred method of UNREP if no fuel is to be transferred. VERTREP can be conducted simultaneously with CONREP to speed the delivery of cargo while fuel is being delivered.

(1) Ship handling considerations

(2) Flight deck safety

(3) Equipment

d. MSC provides training for employees involved in UNREP operations. The reference for Navy UNREP procedures is NWP 14E, "Replenishment at Sea."

B. MSC operates all of the Navy's mobile logistic support force (MLSF) manned by merchant mariners, including the following ship types:

1. Oilers (T-AO) carry marine diesel and jet fuel, plus small amounts of dry cargo and fresh fruit and vegetables. Helo pad, but no embarked helos.

2. Combat stores ships (T-AFS) carry dry cargo and refrigerated stores. Primarily use VERTREP to transfer cargo. Will deploy with 2 Navy-manned helicopters for this mission.

3. Ammunition ships (T-AE) carry ammunition and have an alongside refueling capability and some stores. Primarily use VERTREP to transfer cargo. Will deploy with 2 Navy-manned helicopters for this mission.

4. Fast Combat Support Ships (T-AOE) carry ammunition, fuel and cargo, in effect combining the capability of the T-AO, T-AFS, and T-AE into one ship to support the Carrier Battle Group. The T-AOE also deploys with

three Navy-manned helicopters to support its logistics mission.

C. Since commercial ships (except breakbulk) are not normally outfitted for the above operations, we need to be able to rapidly install equipment if we need ships to have UNREP capabilities. The following equipment could be provided through the Strategic Sealift Program of the office of the CNO in the event commercial ships are needed for direct support missions:

1. Communications upgrades -- Allow merchants and Navy to operate together more closely.

2. Astern or alongside refueling rigs -- Allow merchant tankers to refuel Navy vessels underway.

3. UNREP consolidation or delivery rigs -- Allow general cargo ships to deliver dry cargo to Navy vessels underway.

4. Containership Strike-Up System (CSUS)-- Could be installed to allow access to containerized cargo underway for delivery to Navy vessels, allowing containerships to deliver combat stores like a T-AFS (combat support ship).

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 19 **HOURS: 1**

TITLE: Merchant Ship Self-Defense and International Law

I. Learning Objectives

A. The student will discuss the legal position of merchant ships during peace, tension/undeclared war, and declared war under international law.

B. The student will explain the guidelines for reacting to harassment by belligerent forces during times of tension/undeclared war.

C. The student will discuss the actions merchant ships are permitted to take in self-defense in a declared war.

D. The student will explain the Geneva Convention rights and duties of civilian merchant mariners taken as prisoners of war.

II. References and Texts

A. Instructor References

1. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

2. NWP 9 (Rev. A), "The Commander's Handbook on the Law of Naval Operations"

3. International Law for Seagoing Officers

4. Naval Science for the Merchant Marine

B. Student text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures: Lecture/discussion

V. Presentation

A. How does international law apply to merchant ships?

1. International law recognizes only two states of existence: peace and declared war. Situations of high tension and undeclared war are treated as peacetime for legal purposes.

2. Discuss the bodies of law that apply to merchant ships in peace and war.

    a. Peace

        (1) International Rules of the Road

        (2) International laws and agreements recognized by country of registry [e.g., Safety of Life at Sea (SOLAS) agreement to which U.S. and most other maritime nations are parties].

        (3) Merchant ships in international waters are considered to be the territory of the country of registry; thus, any crime committed onboard that ship is subject to trial under the laws of the country of registry.

        (4) Merchant ships in the internal or territorial waters of foreign countries are subject to the laws of the host nation (except in the case of a passage through territorial seas with no port visit); however, host nations customarily refrain from exercising jurisdiction over matters involving only the crew and not affecting public order or safety.

    b. Wartime

        (1) The Hague Conventions govern the conduct of combat operations and are designed to prevent perfidious, indiscriminate, or inhumane acts of violence that do not serve a legitimate military purpose.

        (2) The Geneva Convention governs the humane treatment of casualties, prisoners of war, and the civilian population.

B. During periods of tension or undeclared war, whether or not the U.S. is directly involved, U.S. flag vessels might be harassed by foreign military or merchant vessels. This might be done to collect intelligence, interfere with military exercises, provoke the U.S. into an act of war, or intimidate U.S. shipping companies into suspending their operations in an area.

    1. The following actions are considered harassment:

a. Intentional collisions or near misses.

b. Restricting the right of free passage in international waters or the right of innocent passage through an international waterway in territorial waters.

c. Firing at or near merchant vessels.

d. Cutting fishing nets.

e. Boarding and seizing.

f. Taking prisoners/hostages.

2. The following actions should be taken to counter harassment:

a. Comply with international law to the maximum extent possible.

b. Notify national authority (i.e., the Department of State) as soon as possible and keep them informed of further developments.

c. Notify the harassing ship that you are in international waters or an international waterway exercising your right of free or innocent passage.

d. If seizure appears probable, destroy all classified documents.

e. Keep a complete record of the incident, including log entries, navigational plot, and, if possible, photos or videos of the incident.

f. Upon arrival inport, deliver all logs, plots, etc., to national authority (i.e., U.S. consulate or other State Department facility).

g. Unless naval control of shipping is in force, merchant ships remain under owners' control, and, thus, may take advice from U.S. warships, but they are not required to follow their orders.

h. Since privately owned merchant ships are not armed in peacetime, it is not usually prudent to risk crew and cargo if the harassing vessel has demonstrated the intent to use force to prevent free passage (e.g., by firing a warning shot across your bow).

C. Merchant ship wartime conduct

1. A merchant ship is considered to be a non-combatant unless armed with offensive weapons. As a non-combatant, it may use defensive weaponry to resist a clear attempt by an enemy to capture or sink it, but may not interfere with the passage of merchant/fishing vessels or any warships or aircraft that do not demonstrate hostile intent. In deciding to resist, the master must accept the risks that may result from the use of force to overcome resistance. The enemy is not entitled to sink a ship in response to resistance.

2. As non-combatants, merchant ships may also disguise the appearance of the ship to reduce the likelihood of identification by enemy forces, subject to the approval of national authority. (For merchants, this approval would be transmitted through the NCAGS.) Legal deceptions include:

    a. Use of false colors or changing name and registry markings to appear neutral. (A ship must show its true colors before going into action).

    b. Altering the appearance of the ship through the use of false superstructures, disguises, deceptive lighting, etc.

    c. Concealing defensive armament.

3. If a ship is outfitted with offensive weapons (e.g., anti-ship cruise missiles) or interferes with the passage of other vessels, it loses non-combatant status and may be treated as a warship.

4. It is illegal to misuse protective signs (e.g., the red cross signifying a hospital ship) or distress signals to deceive the enemy.

5. Legal obligations of and towards a prize:

    a. Surrender is normally signified by stopping the ship or hauling down colors. Once the ship has been surrendered, it becomes a prize.

    b. It is illegal to open fire after signaling surrender.

    c. If the opportunity presents itself, the master may attempt escape, recapture, or scuttling the ship; however, the potential loss of life may weigh against this decision. If the enemy fails to maintain continuous and effective control of the ship, the master should take the opportunity to escape, and he may not be punished for such an escape attempt if subsequently recaptured.

d. Civilian merchant mariners are entitled to prisoner of war status under the Geneva Convention, if captured in the line of duty.

D. Geneva Convention rights and duties of prisoners of war

1. You are required to provide only four pieces of information to your captors:

a. Name

b. Rank

c. Identification number (usually social security number for U.S. servicemen)

d. Date of birth

2. It is your duty not to divulge any information that may jeopardize the safety or success of friendly military forces if it is within your power to resist doing so.

3. As a POW, you have the following rights:

a. You may not receive torture or corporal punishment for the purpose of extracting information or enforcing POW camp discipline.

b. You may not be detained more than 30 days for violating POW camp regulations.

c. You may communicate any complaints about your treatment to the camp commandant, the government of the nation holding you, and the International Red Cross.

d. You may not be punished for attempting to escape unless you kill or injure someone in the process of escaping.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 20 **HOURS: 1**

TITLE: Merchant Ship Self-Defense and Operational Security

I. Learning Objectives

A. Discuss the types of information that would endanger merchant ships in convoy or other military operations if revealed to the enemy.

B. Identify/explain the procedures for preventing the disclosure of a ship's position or course underway, including emissions control.

C. Identify/explain the procedures for protecting classified documents, logs, publications, etc.

D. Identify/explain the procedures for preventing verbal disclosure of classified or sensitive information.

II. References and Texts

A. Instructor References

1. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

2. The Price of Admiralty

3. International Law for Seagoing Officers

4. Naval Science for the Merchant Marine

B. Student text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

D. Videos (optional):

1. "Operations Security"

2. "Action in the North Atlantic"

3. "Suicide Run to Murmansk"

E. VCR/Monitor (optional)

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

B. Procedural and student activity options: Use sea stories or World War I accounts of convoy operations to illustrate the importance of OPSEC principles. (The Price of Admiralty is a good source.) Show the OPSEC video after the lecture. If available, the other two videos provide good references on "how to" and what can go wrong.

V. Presentation

A. A good introduction to this topic is to quote the old sailor's saying, "Loose lips sink ships." *(The students will hear this quote again from Humphrey Bogart in "Action in the North Atlantic," if that video is shown. The video is a good way to reinforce some of the principles of this lesson.)*

B. Define OPSEC (operational security): "Taking measures to prevent the disclosure of information which might jeopardize the safety of military forces or the success of military operations."

C. The following types of information, if disclosed, may jeopardize your shipmates or other friendly forces and may cause a military operation to be unsuccessful:

1. Route instructions

2. Convoy arrangements

3. Convoy assembly points

4. Escorts or movements of allied warships

5. Nature of cargo

6. Arrival or sailing dates

7. Occurrence or details of combat action

D. The following measures must be taken to prevent leakage of this information:

1. Avoid indiscreet conversation ashore regarding the above topics.

2. Be wary of enemy agents in all ports; avoid shop talk in public. Just because someone seems okay doesn't mean they are. If anyone tries to get out of you confidential information regarding your operations, report the incident to your superiors immediately.

3. Do not discuss the above information with the media, neutral nation consuls, port authorities, or others who might pass information on to the enemy.

4. Do not discuss the above information over telephone or other landline or microwave communications, unless they are encrypted secure lines.

5. The above information may only be transmitted by radio if encrypted or scrambled.

6. Documents containing above information (e.g., used charts, logs, publications, sailing orders, etc.) must never be taken ashore or disposed of in a neutral port and must be handed over to Navy or U.S. consular officials for destruction.

E. Underway, the ship's position and course must not be inadvertently given away to enemy ships, aircraft, or submarines.

1. Minimize smoke from stacks. Do not operate soot blowers in daylight.

2. Avoid leaving a trail of trash/garbage/oily waste in your wake. Discharge at night only; puncture trash bags.

3. Darken ship at night. This includes no smoking on weather decks.

4. Messages may be transmitted with the master's approval only.

5. Implement EMCON (emissions control). The commander of a convoy or naval force will promulgate guidance on authorized electronic/visual emissions. Remember, most military organizations have the capability to intercept and analyze radio frequency emissions. Other types of emissions, like flashing lights, can also give ship's position away.

6. Implement “Quiet Ship.” Reduce the noise from your ship to preclude detection and identification by submarines.

F. Procedures for protecting written classified information:

1. Inport, all classified publications must be locked in the master's safe. Underway, publications needed on the bridge must be kept in a locked box when not in use.

2. No records containing classified information may be kept onboard except ship's Secret Log, which must be turned over to naval authorities after the voyage.

3. Navigational records and calculations must be destroyed when no longer needed. Charted positions and tracks must be lightly penciled to allow complete erasure. Destroy old charts when new ones are issued.

4. If ship is in imminent danger of sinking or capture, all classified information must be destroyed or thrown overboard in weighted bag(s) or container(s).

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 21 **HOURS: 1**

TITLE: Merchant Ship Self Defense: Conventional Weapons and Tactics

I. Learning Objectives

A. The student will identify the types of conventional attacks to which a merchant ship may be subjected and the self-defense weapons and tactics appropriate for each, including air, surface, submarine, mine, inport underwater, and cruise missile attacks.

B. The student will know how to prepare a merchant ship in advance to minimize battle damage and increase damage control effectiveness of the crew.

C. The student will know the types of modular weapons and countermeasures systems that could be rapidly installed on merchant ships to enhance self-defense capability.

II. References and Texts

A. Instructor References

1. NWP 3-20.31, "Surface Ship Survivability"

2. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

3. International Law for Seagoing Officers

4. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

D. Video: "Beating the Odds: The USS Samuel B. Roberts' Fight for Life" -- The mine-hit sequence is a realistic scenario for merchant ships involved in military operations.

F. VCR/Monitor

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

B. Procedural and student activity options

1. Use video to illustrate the need for effective preparation and training to be successful in combating battle damage.

2. It should be emphasized that merchant ships' damage control capabilities are extremely limited compared to Navy standards, due to the requirements of efficient cargo ship design and the extremely small crews that operate a modern merchant ship. Damage control training beyond that required for licensing can provide useful insight to the merchant officer, but Navy procedures are of limited usefulness on merchant ships. Today, as in World War II, many merchant ships sustaining direct hits, especially below waterline, must be abandoned.

V. Presentation

A. Whether a ship is routed independently or in convoy, merchant ships are vulnerable to many types of attack in a declared war or period of high tension.

1. Air attack

2. Surface attack

3. Submarine attack

4. Underwater attack in port

5. Mining

6. Missile attack

B. If a ship comes under attack or has reason to expect an attack is imminent, report the situation to the convoy commodore or nearest naval authority immediately. Include all pertinent information that may enable the Navy to determine the size/type/location of attacking force, the type of weapons used, and the status of the ship after the attack.

C. Prepare for attack in advance if in a danger area:

1. Set maximum watertight integrity.

2. Ensure damage control equipment is ready for use.

3. Minimize fire and missile hazards.

4. Man weapons systems as appropriate to level of danger.

5. Ensure crew has protective equipment ready, e.g., gas masks, fire retardant coveralls, flash hoods, etc.

D. In the event of battle damage, use standard merchant procedures for extinguishing fires, containing flooding, and maintaining stability and buoyancy, if possible. If the master determines the ship cannot be saved, he will order it abandoned. It must be emphasized that effective damage control and abandon ship training MUST be conducted before combat to minimize the inevitable chaos that will occur if the ship is seriously damaged. Training will certainly save lives and may save the ship as well.

E. Air attack (by manned aircraft)

1. Hostile aircraft will normally be designated as targets and permission to fire granted in advance by convoy commodore/SUWC.

2. Regardless of permission, fire on enemy/unrecognized aircraft if approaching in hostile manner (altitude low and decreasing).

3. Engage nearest approaching aircraft if line of fire is clear. (Don't shoot over friendly ships.)

4. Try to distract pilot if his aircraft is armed with unguided weapons. Shooting signal flares, steaming upwind (so the pilot has to compensate for crosswind to attack on your beam), and making heavy smoke can be effective.

5. Drive erratically to disrupt his attack.

F. Surface attack

1. Use speed to outrun the enemy or delay him from catching you, if possible. Delaying tactics and damage to enemy can buy time to allow friendly forces to come to your aid, or at least catch the raider and save the next victim.

2. Be extremely vigilant for disguised merchant ships (raiders) and small, fast patrol boats.

3. If attacked by gunfire, zigzag or steer toward the fall of shot and use smoke to disrupt the enemy's fire control solution.

4. Use defensive armament if in range. Don't forget the law of gross tonnage: If you are a lot bigger than he is, and he gets too close, ram him.

G. Submarine attack

1. Keep sharp visual lookout for torpedo tracks, periscopes, snorkels, and surfaced submarines.

2. If no torpedo track is apparent when a submarine is detected, move away from the submarine's reported position at full speed. This forces the submarine to move at higher speeds to catch you, increasing his vulnerability to detection and may deter him from pursuit.

3. If a torpedo is reported:

   a. Increase to full speed.

   b. Follow torpedo evasion procedures. These will be promulgated in sailing folder based on expected enemy capabilities. For old-fashioned, straight-running torpedoes, procedures are in ATP 2, Vol. II. Torpedo evasion procedures should be practiced in advance, whenever possible.

   c. All hands brace for shock.

4. After an unsuccessful torpedo attack, continue at best speed, making course changes up to 30 degrees periodically to disrupt the enemy's fire control solution.

H. Underwater attack in harbor

1. Ready small arms and machine guns, and post armed sentries. If no harbor defense forces are available, it may be prudent to patrol with a small boat.

2. Rig a bottom line and work around ship to detect attached "limpet" mines.

3. Turn screws, cycle rudders, operate large sea suctions, such as fire pumps and circulating pumps, to disrupt divers.

4. Use percussion grenades, if supplied.

5. Operate fathometer or other underwater sound equipment, if available at maximum power.

6. Report immediately to harbor defense organization and nearby ships and maintain effective communications.

I. Mine warfare

1. Mines have many types of fusing devices, so intelligence on likely types in use by the enemy can help merchant crews take effective countermeasures.

2. Discuss basic mine classification.

   a. Moored

   b. Bottom

c. Free-floating

d. Contact

e. Influence

(1) Pressure

(2) Acoustic

(3) Magnetic

(4) Combination

3. For moored contact mines, follow in wake of another ship and minimize course changes.

4. For magnetic influence mines, use degaussing (if installed) to suppress the ship's magnetic signature.

5. For acoustic influence mines, minimize noise by proceeding at quietest speed, avoiding rapid course/speed changes, and minimizing rudder movement. Do not start or stop auxiliary machinery, and turn off ship's fathometer.

6. For pressure influence mines, proceed as slowly as possible.

7. The best defense against all types of mines is to avoid mined waters. Deep waters are safer than shallow if mining is suspected.

8. Post a mine watch and destroy mines with small arms fire, if detected.

J. Anti-Ship Cruise Missiles (ASCMs)

1. Many ASCMs are launched from over the horizon. They are small, fast, and often sea-skimmers. Thus, they are hard to detect visually or on radar.

2. The best defense against ASCMs is to destroy units armed with them before they can launch them. The other weakness of these weapons is that they require targeting information to be effective; to acquire such information, enemy forces may give away their presence. Merchant ships can help Navy units counter the ASCM threat through vigilant watchstanding and reporting.

a. Watch for evidence of surveillance, e.g., tattletale ship or low-flying aircraft near horizon. Report to naval authority, so patrols can investigate.

b. Watch for telltale flash and puff of smoke that may indicate the launch of cruise missile. Report the bearing and approximate range immediately for counterattack.

3. Maintain a constant radar and visual lookout, since signs of attack will be fleeting (radar pop-up contact or flash and smoke trail on horizon).

4. If an inbound missile is detected, turn your ship to present lowest radar cross-section, give angled impact against hull/superstructure, and expose least vulnerable part of ship to attack. Normally, this means turning your port or starboard quarter to the reported launch bearing of the missile.

5. All hands brace for shock.

6. If a missile hits but fails to explode, cool with fire hoses to prevent explosion if it is on fire. When fire is out, secure the missile to prevent movement until a Navy explosive ordnance disposal team arrives. Make a blast route to open deck by opening doors/hatches. Ensure the boundaries of the blast route are stocked with firefighting equipment and are posted to keep people out. The blast route should be cleared of flammable material and loose equipment. Drain fuel tanks in the vicinity of the unexploded missile and fill with water.

K. Discuss modular self-defense systems that could be installed on merchant ships, including uses, effectiveness, and methods of operation. Note that these systems would probably be accompanied by a weapons detachment that would operate and maintain them.

1. Small caliber guns

2. CIWS (Close In Weapon System) Vulcan/Phalanx

3. RAM (Rolling Airframe Missile)

4. Chaff

5. Nixie

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 22 **HOURS: 1**

TITLE: Merchant Ship Self-Defense: Chemical, Biological, and Radiological Warfare

I. Learning Objectives

A. The student will relate the effects of a nuclear explosion.

B. The student will relate the effects of chemical and biological weapons.

C. The student will discuss the basic measures needed to protect ship and crew from the effects of nuclear, biological, and chemical attacks.

II. References and Texts

A. Instructor References:

1. NWP 3-20.31, "Surface Ship Survivability"

2. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

3. International Law for Seagoing Officers

4. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

D. Video: "Nuclear Defense at Sea"

F. VCR/Monitor

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion. Show and discuss video. Cover remaining objectives.

B. Procedural and student activity options: Use surplus CBR personal protective gear to demonstrate procedures or as a display of what might be issued to merchant ships in wartime.

V. Presentation

A. In an era of growing proliferation of weapons of mass destruction, the possibility of nuclear, chemical, or biological weapon usage against merchant ships in wartime has not decreased. Knowledge of how these weapons work and the basic measures that any crew can take to counteract them can save lives and equipment.

B. Effects of nuclear weapons

1. Types of bursts that will affect merchant ships:

a. Air burst

b. Surface burst

c. Sub-surface burst

2. Effects of nuclear explosions

a. Light flash/thermal radiation will cause permanent or temporary blindness and burn exposed skin of topside personnel in an air or surface burst.

b. Initial nuclear radiation, gamma and neutron radiation emitted within the first few seconds can contribute to radiation sickness of personnel in an air or surface burst. Water and solid substances attenuate this radiation.

c. Air blast and underwater shock waves are pressure waves which travel at the speed of sound in air and water and cause most of the physical damage in a nuclear explosion. On a ship, these waves damage hull, superstructure, and machinery, and throw people and objects around. Air blasts result from air or surface bursts, while underwater shock waves are caused by surface and subsurface bursts. The subsurface shock waves are much more severe.

d. High speed surface winds and high waves travel well below the speed of sound, but reach beyond the radius of severe and moderate blast damage. These effects cause negligible damage to seaworthy ships, but can sink ships already damaged by other effects. Air and surface bursts cause high winds, while surface and subsurface bursts cause high waves.

e. Fallout is a result of all types of bursts, but is especially severe in the case of surface or subsurface bursts. These bursts push large quantities of water and other particles

irradiated by the explosion high into the atmosphere. There are two types of fallout:

(1) Immediate fallout is radioactive water in the form of a base surge (mist from the huge water column falling back into ocean) and heavy radioactive particles dropped from the mushroom cloud. Ships close enough to receive light damage are close enough to be heavily contaminated.

(2) Delayed fallout consists of radioactive particles suspended in the mushroom cloud which start to fall 15-60 minutes after the burst. EFW (effective fall-out wind) at the height of the cloud will push the cloud downwind at the speed of wind. The cloud is assumed to form a circle 10 NM in diameter whose center moves in the direction and speed of EFW.

3. Steps to take for nuclear attack

a. Before attack

(1) Train and drill crew on a prearranged plan.

(2) Strike down non-essential topside equipment, especially porous material.

(3) Set up sealable, deep shelter spaces with washing/lavatory facilities and food supplies sufficient to last through passage in a dangerous area. A minimum watch for safe navigation should be on station if attack is expected; all others should take shelter.

(4) Rig washdown nozzles. Concentrate on protecting bridge, engine room vents, and deep shelter areas if the whole ship cannot be covered.

(5) All personnel not in deep shelter should wear protective clothing/gas masks.

(6) Rig decontamination showers for personnel returning to deep shelter.

(7) Make an airtight envelope inside skin of ship as much as possible.

b. During/after attack:

(1) All hands brace for shock and cover eyes if topside.

(2) Turn stern to blast, move directly away at full speed until waves/winds pass, and then maneuver clear of the predicted path of the fallout cloud. Unless otherwise directed, rendezvous with convoy 20 miles upwind of burst point.

(3) Rotate crew through watchstations to spread exposure evenly. Crew returning to deep shelter must strip and shower to prevent spread of contamination.

(4) Restrict unnecessary movement about ship to minimize spread of contamination.

(5) Avoid distilling potable water in fallout danger area.

(6) Decontaminate ship when clear of fallout cloud by hosing down with saltwater.

C. Effects of chemical/biological attack

1. Chemical attacks are of limited military usefulness against naval forces but can be used for terror value. Thus, they may be aimed against the most vulnerable ships, the merchants. Types of chemical weapons that might be effective against a merchant ship:

a. Nerve agents produce confusion, blurred vision, and shortness of breath, followed by loss of control of body functions, convulsions, and death. They are deadly in small doses whether inhaled, ingested, or absorbed through the skin.

b. Blister agents irritate the eyes, skin, and respiratory tract, causing serious damage through blistering. Can be deadly if inhaled. They give off the odor of garlic. Symptoms affect the eyes first, then other parts. These agents penetrate clothing within a few minutes.

c. Incapacitating agents are non-lethal agents that incapacitate exposed crew through temporary paralysis, vomiting, diarrhea, convulsive spells, or mental confusion for a period of minutes to days.

2. Methods of delivery could include bombs, missiles, shells, or aerosol spray from cruise missile/aircraft.

3. Biological agents include any organisms that can be used to produce incapacitating or deadly disease. Wide variation is possible; however, for delivery against a naval target, micro-organisms that can be sprayed in an aerosol cloud or released from a bomblet would be

most useful. Even more than chemical agents, biological agents are primarily useful for causing terror, since the incubation period for most is too long to immediately threaten the operations of a ship.

4. Methods of protection against chemical/biological agents:

a. Preparation for attack:

(1) Train and drill the crew on a prearranged plan.

(2) Strike down non-essential topside equipment, especially porous material.

(3) Make an airtight envelope inside the skin of the ship as much as possible. Minimize the crew outside the airtight envelope.

(4) Rig washdown nozzles. Concentrate on protecting bridge, engine room vents, and deep shelter areas if whole ship can't be covered.

(5) Ensure all personnel wear protective clothing and gas masks.

(6) Rig decontamination showers.

b. Following attack:

(1) Maneuver clear of aerosol cloud.

(2) Decontaminate ship and crew when clear of aerosol cloud by hosing down and showering exposed crew.

D. Discuss protective equipment that could be available to merchant ships if CBR threat exists.

1. Mk 5 or MCU-2P gas mask

2. CPO (chemical protective overgarment) suit and impermeable clothing

3. Personal decontamination kit

4. Atropene auto-injector kit

5. Personal dosimeters and radiacs

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 23 **HOURS: 1**

TITLE: Communications Principles and Emergency Procedures

I. Learning Objectives

A. The student will relate the different types of communication available to naval and merchant vessels and list their advantages and limitations.

B. The student will discuss the importance of the basic methods used to assure emissions control (EMCON) and communications security (COMSEC).

C. The student will understand the principles of radio wave propagation and how they affect the operation of naval communications equipment.

D. The student will explain how naval radio communications are organized, including methods of communication, radio watches, call signs and circuits (nets).

E. The student will identify the communications equipment systems generally available to merchant ships and how they would be used in naval or military operations.

F. The student will know how to contact the U.S. Navy in case of an emergency at sea.

II. References and Texts

A. Instructor references

1. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

2. "Radio Navigational Aids" (NIMA Pub 117), Chapter 4, Article 410A, and Chapter 8

3. COMSC Instruction 2000.2 CH-1, "MSC Communications Policy and Procedures Manual" (Available online at http://www.msc.navy.mil/instructions/.)

4. Naval Science for the Merchant Marine

B. Student text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion.

B. Procedural and student activity options: Have students research and report on how INMARSAT and GMDSS are used on merchant ships.

V. Presentation

A. Numerous types of communication are available to naval and merchant ships. *(Discuss advantages and limitations of each as applied to merchant ships.)*

1. Sound/audio

a. Loudspeaker

b. Underwater telephone

2. Visual

a. Flag hoist

b. Flashing light

c. Colored lights

d. Pyrotechnics

3. Radio

a. Radio teletype (RATT)

b. Radiotelephone (R/T)

c. Radio FAX

d. INMARSAT

e. Cellular

f. Computer/GMDSS

B. Emissions control (EMCON)

1. Radio silence and radio direction finding (RDF)

2. When to break radio silence

3. Radar silence and electronic surveillance measures (ESM)

4. Darken ship, preventing detection of visual communications

5. Quiet ship, reducing unnecessary noise

6. Use of radars and fathometer

C. Communications Security (COMSEC)

1. The protection resulting from all measures designed to deny unauthorized persons information from the possession and study of telecommunications

2. Communications security management system (CMS) -- System to ensure communication security.

3. Composed of four elements:

a. Crypto security -- Actions to ensure the proper use and maintenance of cryptosystems.

b. Transmission security -- Measures to protect transmissions from interception and exploitation.

c. Emission security -- Measures to deny unauthorized individuals information that can be derived by intercepting and analyzing emissions from telecommunication systems.

d. Physical security -- Physical measures to safeguard communications equipment, material, and documents.

4. Authentication

D. Radio propagation principles

1. Frequency bands and their uses

2. Propagation effects

a. Reflection

b. Refraction

c. Diffraction

d. Trapping

3. Types of waves

a. Ground wave

b. Sky wave

E. Methods of radio communication

1. Receipt

2. Broadcast

3. Intercept (relay)

F. Radio watches

1. Guard

2. Cover

3. Copy

4. Listen

G. Call signs

1. Purpose of call signs

2. Types of call signs used by merchant ships

a. International call signs (assigned by national authority in accordance with international agreements)

b. National interim war radio call signs

c. Secure call signs (assigned by NCSO)

d. Merchant ship collective call signs

e. Convoy internal call signs

3. How to prevent compromise of call signs

H. Radio circuits (nets)

1. Definition of a circuit

2. Types of nets

a. Free

b. Directed

3. Net control station

4. Ship-to-shore communications

5. Ship-to-ship communications

6. Inport communications

I. U.S. flag merchant ships are required to have the following communications capabilities:

1. MF transmitter/receiver between 405-535 kHz (continuous wave radiotelegraph), capable of transmitting and receiving on International Distress Frequency of 500 kHz.

2. LF receiver between 100-200 kHz.

3. VHF bridge-to-bridge R/T, capable of transmitting and receiving on Channel 16 (156.8 MHz) Distress and Calling Frequency.

4. HF transmitter/receiver R/T or radiotelegraph, capable of transmitting on 2182 kHz International Distress and Calling (SOLAS requirement).

5. INMARSAT (International Maritime Satellite), optional satellite communications link to shore communications network.

6. GMDSS (Global Maritime Distress Signaling System), on all ships as of 2/1/99.

J. Emergency Communications with U.S. Navy

1. Piracy and terrorism are issues for today's merchant marine in support of Navy operations and in commercial commerce. All Merchant Marine Officers need to know how to communicate with the Navy in case of emergencies.

2. Procedures, phone numbers and radio frequencies are provided in NIMA Pub 117, "Radio Navigational Aids," Article 410A and Chapter 8.

3. Options:

   a. Contact Regional Navy Command Center via INMARSAT. *(Review phone numbers and areas of responsibility from NIMA Pub 117.)*

   b. Contact Regional Military Command Center via HF Radio. *(Review frequencies and areas of responsibility from NIMA Pub 117.)*

   c. Discuss with class the option of using GMDSS to contact military.

   d. If in the vicinity of U.S. Navy ships, contact via VHF (Ch 16) Bridge-to-Bridge radio.

4. Message format must include the following information:

   A. Name of ship
   B. International radio call sign and INMARSAT ID
   C. Position (Latitude/Longitude)
   D. Date and Time (GMT)

E. Description of event

Example:

TO CINCPACFLT OPCONCEN
A. M/V GOAMERICA
B. KGAC/5555555
C. LAT 35N, LONG 120E
D. 151600Z NOV 2000
E. SHIP UNDER ATTACK BY MACHINE GUN AND RIFLE FIRE FROM SMALL BOAT AND BEING BOARDED BY PIRATES OR TERRORIST. PERSONNEL CASUALTIES ON DECK.
F. REQUEST IMMEDIATE ASSISTANCE

5. **IMPORTANT NOTE:** STAY ON LINE UNTIL MESSAGE IS RECEIPTED OR UNTIL TOO DANGEROUS TO STAY ON LINE.

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 24 **HOURS: 2**

TITLE: Communications Procedures

I. Learning Objectives

A. The student will identify the common types of naval messages used by merchant ships.

B. The student will apply the procedures for drafting a naval message.

C. The student will apply naval procedures for tactical and administrative radiotelephone communications.

D. The student will recall the phonetic alphabet and numerals and their radiotelephone pronunciations.

II. References and Texts

A. Instructor References

1. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

2. COMSC Instruction 2000.2 CH-1, "MSC Communications Policy and Procedures Manual" (Available online at http://www.msc.navy.mil/instructions/.)

3. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Chalkboard

B. Handouts

1. Message drafting exercise handout (locally generated)

2. Tactical communications exercise script (locally generated)

C. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion

B. Procedural and student activity options

1. Message drafting exercise

2. Tactical communications exercise

V. Presentation

A. Explain the difference between tactical and administrative communications.

1. Tactical communications are used between units and commanders for real-time coordination of maneuvering, exercises, and combat action.

2. Administrative communications are used between units and commanders for non-real-time planning, support, and reporting functions (includes both operational messages, such as alarm reports, and administrative messages).

B. Naval messages are used for administrative communications (use a locally generated handout)

1. Parts of a receipt message (explain each part)

a. Call sign

b. Precedence

(1) Flash

(2) Immediate

(3) Priority

(4) Routine

c. Date/time group

d. Address

e. Text

f. Authentication

2. Encryption procedures for merchant marine messages

3. Types of messages commonly used by merchant ships in wartime

a. Alarm Report (use locally generated handout)

b. Distress Message (use locally generated handout)

c. Instructions for intercepted alarm reports/distress messages

d. Overview of other message types used by merchant marine:

(1) Survivor Report

(2) Weather Report

(3) New Position Report

C. Message drafting exercise: Use a locally generated exercise to give students in-class or homework practice in drafting alarm reports and distress messages.

D. Operational use of the radiotelephone (R/T) in convoy operations

1. Convoy voice call signs

Critical call signs are:

Convoy commodore	Bull
Vice commodore	Calf
Rear commodore	Colt
Convoy collective	Team
Section	Sack
OTC	Boss
Escort ships collective	Gang
Escort ship individual	Soda
Rescue ship	Cork
Guided missile ship	Shot
Escorting aircraft	Lazy
Stragglers	Plank

2. Operating procedures

a. Phonetic alphabet

b. Pronunciation of numerals

c. Prowords

d. Establishing communications

e. General rules for R/T use

f. Voice transmission of messages

g. Use of R/T for tactical signaling

(1) Delayed executive format

(2) Immediate executive format

(3) Information signals

(4) Use of ATP 2, Vol. II, codes for convoy tactical signaling (in ATP 2, Vol. II, bridge supplement)

E. Practical exercise in R/T tactical signaling: Use a locally generated exercise script to give students practice using proper R/T procedures.

F. Convoy visual signaling methods and procedures

1. Flag hoist

a. Flag hoist procedures

b. Executing tactical signals by flaghoist

2. Flashing light

3. Colored light/Pyrotechnics

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 25 **HOURS: 1**

TITLE: Preparing for Convoy Operations

I. Learning Objectives

A. The student will list the advantages and disadvantages of convoying.

B. The student will explain the factors necessary for the success of a convoy.

C. The student will be familiar with the command relationships between the officer in tactical command (OTC), the convoy commodore, and shipmasters.

D. The student will recall the naval control of shipping publications required for U.S. flag merchant vessels.

E. The student will relate the purpose of the convoy conference, when it is held, and who is required to attend.

II. References and Texts

A. Instructor References

1. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

2. NTTP 3-07.12, "Naval Cooperation and Guidance for Shipping"

3. COMSC Instruction 2000.2 CH-1, "MSC Communications Policy and Procedures Manual" (Available online at http://www.msc.navy.mil/instructions/.)

4. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

C. Videos (optional):

1. "Suicide Run to Murmansk" -- Covers all aspects of a World War II convoy; much of it is still relevant.

2. "Action in the North Atlantic" -- A good introduction to convoy operations.

D. VCR/Monitor (optional)

IV. Suggested Methods and Procedures:

A. Lecture/discussion.

B. Optional Exercise: Show and discuss "Suicide Run to Murmansk" or "Action in the North Atlantic," if available. Have students complete an assignment that draws their attention to events in the movie plot related to lecture material on convoy operations.

V. Presentation

Convoys are no longer necessary in today's threat environment with today's high-speed merchant ships. This lecture is retained to show how the Merchant Marine supported the global wars of the first half of the 20th century and what they did. Naval Control and Protection of Shipping has replaced the convoy system for the foreseeable future.

A. Brief review of the history of convoy operations

1. World Wars I & II

2. Iran-Iraq War (operation Earnest Will)

3. Persian Gulf War -- Not used; Naval Control of Shipping used instead due to high speed of merchant ships and lack of long-range threat to shipping.

4. Convoy formations have been used to organize merchant ships at sea supporting military operations (Haiti).

B. Instituting a convoy

1. Advantages of a convoy

a. Most economical use of escort forces.

b. Reduced number of targets for commerce raiders.

c. Principle of concentration of force allows more effective defense.

d. Minimizes long-range communications from ship to shore.

e. Morale of merchant mariners is higher if they are protected.

2. Disadvantages of a convoy

a. Speed is limited to that of slowest ship in convoy.

b. Provides an attractive target (i.e., easy to detect, large number of unarmed ships in one place with high military value).

c. Port congestion and inefficient use of port facilities.

d. Not always the best way to move large quantities of cargo over vast sea spaces where no threats exist.

C. Factors necessary for a successful convoy

1. Organization

2. Management

3. Seamanship

D. The convoy organization

1. Convoy commodore

2. Vice/rear commodores

3. Officer in tactical command (OTC)

4. Ship's master

5. Command relationships

E. Publications required for naval control of shipping

1. ATP 2, Volume II

2. NTTP 3-07.12

3. Sailing Folder

F. Sailing folder details

1. Purpose

2. Classification

3. Contents

G. Convoy conference

1. Purpose

2. Timing

3. Required attendees

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 26 **HOURS: 1**

TITLE: Convoy Operations Underway

I. Learning Objectives

A. The student will identify the reference points used to facilitate leaving and entering the harbor.

B. The student will recall who formulates the convoy formation and what variables are considered.

C. The student will recognize the convoy guide and recall the procedures for replacement when the original guide is disabled.

D. The student will discuss the importance of accurate station keeping.

E. The student will relate the three normal methods for altering course in a convoy.

F. The student will explain how a convoy zigzag plan is executed.

G. The student will explain how emergency turns are ordered and executed.

H. The student will recall how and when emergency convoy formation, fanwise scattering, and starring are executed.

I. The student will be familiar with special convoy procedures and convoy requirements for general ship operation.

II. References and Texts

A. Instructor References:

1. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

2. NTTP 3-07.12, "Naval Cooperation and Guidance for Shipping"

3. COMSC Instruction 2000.2 CH-1, "MSC Communications Policy and Procedures Manual" (Available online at http://www.msc.navy.mil/instructions/.)

4. Naval Science for the Merchant Marine

5. Convoy: Merchant Sailors at War, 1939-1945 (optional)

6. To Die Gallantly: The Battle of the Atlantic (optional)

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Handouts

C. Locally-generated PowerPoint slides or transparencies from ATP 2, Vol. II, for illustrating convoy maneuvers, such as turning together, starring, etc.

D. Computer/projection system or overhead projector

IV. Suggested Methods and Procedures

A. Method options: Lecture/discussion

B. Procedural and student activity options: Have students practice interpreting tactical maneuvering signals and zigzag plans in class.

V. Presentation

A. Departing the port

1. Mine and anti-submarine protection

2. Reference points

a. Point A

b. Point X

c. Point 0

B. Convoy formation

1. Formulated by the OCA, OTC, convoy commodore, and NCSO

2. Included in the sailing folder

3. Factors in determining distance and interval

4. Station designation grid

5. Station designators used as internal call signs

C. Convoy guides

1. Guide's responsibility

2. Replacement if guide is disabled

a. Single Column

b. Multiple Columns

3. Identified by flying largest available merchant ensign

D. Station keeping

1. Only minor alterations in course and speed

2. Straggler definition and procedures

E. Normal alterations of convoy course

1. Wheeling

a. Restrictions

b. Convoy guide does not change

c. Signal

d. Speed alterations

2. Turning column leaders simultaneously

a. Purpose

b. Restrictions

c. Signal

d. All ships maintain speed

3. All ships turning simultaneously

a. Purpose

b. Restrictions

c. Signal

d. All ships maintain speed

F. Guide shifts

1. Course change less than 90 degrees. Convoy and column guides remain the same.

2. Course change of 90 degrees.

a. Convoy now in line abreast formation.

b. Column guide in the direction of the turn automatically becomes the new convoy guide.

c. Previous column guides remain as row guides for line abreast formation.

3. Course change greater than 90 degrees.

a. The ship now leading the column that contains the former convoy guide automatically becomes the new convoy guide.

b. The ships now leading the columns become column guides.

G. Zigzagging

1. Purpose

2. Signal

a. Plan number

b. Base course

c. Zero time

d. Execution time

3. Procedures

H. Emergency course alterations

1. All ships turn simultaneously 45 degrees to port or starboard.

2. Purpose

3. Signals

4. Any zigzag plan in effect is automatically canceled.

I. Emergency formations and maneuvers

1. Emergency convoy formation

a. Purpose

b. Signal

c. Procedure

d. Resuming normal formation

2. Scattering Fanwise

a. Purpose

b. Signal

c. Procedure

d. Scattering when 90 degrees off the base course

3. Starring

a. Purpose

b. Signal

c. Procedure

J. Special Convoy Procedures

1. Columns astern

a. Purpose

b. Signal

c. Procedure

2. Single line ahead

a. Purpose

b. Signal

c. Procedure

3. Exchanging stations

a. Signal

b. Procedure if in same column

c. Procedure if in different columns

d. Exchanging call signs

K. General responsibilities

1. Man overboard

a. Signal

b. Recovery action

2. Navigation

a. Darken ship

b. Navigation lights in fog, low visibility, or unusual conditions

c. Emissions control

DEPARTMENT OF NAVAL SCIENCE
MERCHANT MARINE OFFICER TRAINING PROGRAM
NAVAL SCIENCE FOR THE MERCHANT MARINE OFFICER

LESSON GUIDE: 27 **HOURS: 3**

TITLE: Convoy Exercise

I. Learning Objective:

A. The student will apply convoy procedures in a practical convoy exercise.

II. References and Texts

A. Instructor References

1. NTTP 3-07.12, "Naval Cooperation and Guidance for Shipping"

2. COMSC Instruction 2000.2 CH-1, "MSC Communications Policy and Procedures Manual" (Available online at http://www.msc.navy.mil/instructions.)

3. ATP 2, Vol. II, "Allied Guide to Naval Control of Shipping for Masters of Merchant Ships"

4. Naval Science for the Merchant Marine

B. Student Text: Naval Science for the Merchant Marine

III. Instructional Aids

A. Whiteboard/Chalkboard

B. Computer/projection system and PowerPoint slides or overhead projector and locally-prepared transparencies

C. Convoy exercise handouts (locally prepared)

D. Sailing folders (locally prepared for exercise use)

E. Naval Science for the Merchant Marine, Appendix A -- Use to encode and decode convoy signals.

IV. Suggested Methods and Procedures

A. Method options: Practical exercise.

B. Procedural and student activity options: Participate in convoy practical exercise. Sample exercises can be obtained from the Course Coordinator to assist instructors in developing their own scenarios.

V. Presentation

A. The instructor will conduct a practical convoy exercise to solidify the concepts the students have learned in the course. The convoy consists of pairs of students assigned to a particular merchant ship that begins the exercise at sea. A scenario develops which requires the U.S. government to implement naval control and protection of shipping. All American flag merchants inbound to the United States are instructed to report to the Shipping Coordination Center (SCC) upon arrival.

B. The SCC (instructor) proceeds to organize a convoy utilizing unclassified versions of convoy sailing orders that are developed locally. The ships leave the U.S. on a military or economic resupply mission. The convoy is formed and is met at some point by a naval escort force that provides protection during the remainder of the journey.

C. Throughout a three-hour period (over several class sessions), the students are presented with messages, situations, and maneuvering signals which must be interpreted and acted upon. Each group of students will be assigned a complete set of publications and exercise material (i.e., appropriate excerpts from COMSC Instruction 2000.2 CH-1, Naval Science for the Merchant Marine text Appendix A, and an exercise sailing folder). When confronted with signals or unexpected situations, the student may be given a limited amount of time to obtain the correct answer or indicate what action is required. Each group's written and oral responses will be evaluated by the instructor for correctness and completeness.

D. The scenario should be written to take advantage of local ports and probable contingencies in light of the current or anticipated world situation. Sample exercises can be obtained from the Course Coordinator to assist instructors in developing their own scenarios.